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THE
CANADIAN AGRICULTURIST,

AND

Journal and Transactions

OF

THE BOARD OF AGRICULTURE

OF

UPPER CANADA.

PUBLISHED MONTHLY.

AND DEVOTED TO

Agriculture, Horticulture, Science, and Domestic Economy.

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VOL. XV, 1863.  
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THE
Canadian Agriculturist
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JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV.

TORONTO, JANUARY, 1863.

No. 1.

THE AGRICULTURIST FOR 1863.

In commencing a new Volume of the *Agriculturist*, its Conductors may be allowed a few words in reference to the state and prospects of the publication.

During the past year a reference to the pages of this periodical will show that the great agricultural movements and discoveries of the period have been faithfully chronicled. In doing this, we have not confined ourselves to what has been going on in Canada, or the great American continent, but have availed ourselves of the vast fund of information that is to be found in European publications, particularly those of the United Kingdom of Great Britain and Ireland, to which, as members of the great British Empire, we look in this as in many other respects, for light, guidance, and encouragement. We could have desired a larger amount of original contributions from a Canadian source, a want that has long been felt and deplored. From some cause or other our farmers evince a lamentable apathy in communicating to each other through the press the suggestions and results of their experience and observation; herein unfavourably comparing with their brethren on the other side of the lakes, as the American agricultural papers plainly show. The conductors of several of their journals not unfrequently experience much difficulty in finding space for their contributed articles, while the labour has too often devolved on the conductors of the *Agriculturist* of supplying the al-

most entire material of each successive number. With a fortnightly publication, and numerous pressing duties of another kind, we are obliged to confess that for want of time and opportunity, more than will or desire, our periodical has not reached the high standing which we wish and trust it is destined to attain.

As the *Agriculturist* is the only paper of its kind published in Upper Canada, and the accredited organ of the Board of Agriculture for this section of the Province, one would naturally imagine that its pages would be largely enriched by original contributions, both from individuals and societies throughout the country; a country, too, be it remembered, that is pre-eminently agricultural, and each county and almost each township having a regularly organized society liberally aided by the government. Now we ask the officers of these societies, and enterprising farmers generally, to send us occasionally an account of whatever is important, novel, or interesting that comes within the range of their own local observation or experience. In this way only can our paper properly represent the state and progress of agriculture throughout the country. It is not long, laboured articles that we require, but a simple statement of facts, and anything that is doing that will prove interesting and suggestive. *Farmers of Canada we again ask, will you not contribute material for your own paper?* We are far more in want of contributions than subscribers, though of the latter we can do with any amount of increase.

In order to afford more time in procuring

and arranging material for the work, and thereby to improve it, the *Agriculturist* for the future will be published monthly, commencing with the present issue. The number of pages will be increased, and will never fall short of forty, and as occasion may require more will be added. Notwithstanding the large increase in the price of paper, it has been determined to keep the amount of subscription for this journal at half a dollar a year to single subscribers, with a progressive scale of discount according to the number taken; thus encouraging societies and individuals to form clubs. The *Canadian Agriculturist* will be the cheapest paper of its kind on this continent, and probably in the world! Full particulars as to terms, &c., will be found on the last page.

It is our desire to make the *Agriculturist* more efficient as a means of communication among the lovers of, and such as are professionally engaged in the Horticultural art, than which nothing can tend more to improve and refine and make beautiful our rural homes.—Gardening not only refines and elevates the taste, but it is the means of bringing to our tables not a few of the necessities and luxuries of life. Our country in many places has already passed through what may be termed the rough era, the chopping and clearing of the forest; and the time has fully arrived for the introduction of the beautiful and not less useful art of Horticulture in all its departments. We are thankful to such friends as have contributed to this department of our work during the few past years, and while we make these acknowledgments, and request a continuance of such aid, they will be glad to learn that our future prospects are in this respect more encouraging.

As labour-saving machines must continue to occupy a prominent position in Canadian Agriculture, we shall always feel desirous of giving illustrations and publicity to all such as possess mechanical merits, and a practical utility. Implement-makers are therefore invited to communicate such information respecting their particular productions as will promote at the same time their own and the public interests. It is hoped that the promotion of an Agricultural Museum, noticed elsewhere; and the Depot for tools and implements, both in agriculture and horticulture, about being open-

by James Fleming & Co., of this city, will to facilitate this important object, which we regard as second to none in the advan-

ment of agriculture. We hope therefore to be able for the future to give to all enquirers definite information respecting the price and construction of every implement and machine made in the Province, and where it can be seen and obtained.

Another word and we conclude. The main object of the *Agriculturist* not being profit, either to the Board or individuals, but the dissemination of useful information on the various topics which it embraces, the price is put at the lowest possible rate, so as barely to meet the actual cost for paper and printing. Its principal function consists in forming a medium of communication among the Agricultural and Horticultural Societies of the Province and all such individuals who feel an interest in rural pursuits. The Veterinary department will be both enlarged and improved, and will be found, it is believed, generally useful. While we are desirous of giving a Canadian character to our own publication, we shall always be happy to learn that the better class of American agricultural journals have an extended and increasing circulation in the Province. Our farmers, gardeners, and mechanics cannot observe and read too much; and such ably-conducted papers as the *Country Gentleman and Cultivator*, the *Genesee Farmer*, *American Agriculturist*, *Rural New Yorker*, *Horticulturist*, *Gardeners Monthly*, &c., we welcome among us as valuable auxiliaries in the great work of rural improvement.

THE NEW AGRICULTURAL HALL.

It may not be known to some of our readers that the Board of Agriculture of Upper Canada has recently erected a capacious and suitable building on the corner of Yonge and Queen Streets, in this city, where their offices and library are now permanently located. The basement, with the first and a portion of the second floor, are leased to JAMES FLEMING & Co., as a Seed and Implement Warehouse; and the third, or uppermost floor, occupying the whole area of the building, (38 feet by 76 feet) is to be devoted to the purposes of an Agricultural Museum, Lecture Hall, and Public Meetings that relate to these pursuits. A few words in explanation of these objects will no doubt be acceptable to the reader.

In the preamble to the Agricultural Statute, among the objects stated for the Board to promote is the formation of an Agricultural and Horticultural Library and Museum. The nucleus of such a library has already been formed, and a number of the most approved and standard works in relation to farming, gardening, &c., has been got together. A museum, however, could not even be attempted, with the very restricted accommodation only which the Board has hitherto possessed. The want of adequate and permanent offices, with sufficient room for collecting and exhibiting agricultural and horticultural products, implements, tools, &c., has long been felt as an important desideratum; and much inconvenience, involving serious delays and impediments, was consequently experienced. These obstacles have now been happily removed, and sufficient accommodation of a permanent character has been provided by the erection of a building that is an ornament to the city, and highly creditable to the intelligence and enterprise of the Agricultural community of Upper Canada.

The formation of an Agricultural Museum must necessarily be a progressive work, and will involve no inconsiderable amount both of labour and time. It is one of those things that will continue to increase and improve year by year. A beginning is now being made, and the active co-operation of the farmers, gardeners, and implement makers of the Province is earnestly desired to aid and carry out this useful and patriotic design. These classes are requested to render help both individually and in their collective capacity as societies. Without such assistance, promptly and generously afforded, it will take a long time for the Board unaided, to get a collection together that will adequately represent the agricultural state and progress of this rapidly advancing Province.

It is desired that the Museum should contain specimens of the best cereal productions of Canada, with the names and residences of their producers, and the principal facts in relation to the soil, cultivation, &c. Wheat, barley, oats, rye, maize, &c., should be exhibited in the straw, just as it grew in the field, as well as in the grain. By this means a much better idea can be had of the form

and growth of our various cultivated crops. The grasses too, whether wild or cultivated, should be fully represented and described in a collection of this nature; and we have very much yet to learn in Canada that will be of the greatest practical value and importance respecting this interesting department of husbandry. Characteristic specimens of the varied productions of the farm and the garden, with adequate descriptions, will always be thankfully received as contributions to the Museum.

With respect to implements and machines it has long been felt a desideratum that no depot of sufficient range existed in any one place, and people have often been perplexed and subjected to delay and inconvenience from not knowing where to apply for what they particularly needed. The proposed Museum, it is confidently hoped will, in a great measure, if not fully, meet this want. Of the more bulky machines, such as threshing mills, &c., only models would be adapted to the Museum proper, but arrangements will be made by Messrs. Fleming & Co. for keeping on hand the various implements and machines belonging to Agriculture and Horticulture that are produced in Canada, besides such as are suited to our wants of British and American manufacture. The Board is particularly desirous of having specimens of whatever our own manufacturers are in the habit of making, with full instructions as to price, and the advantages claimed for the respective articles, as ordinary merchandise. Practical utility, and not the gratification of a mechanical curiosity, is what is most desirable to attain in such an arrangement. Implement-makers, upon reflection, will perceive that this plan, although but imperfectly sketched, will, if properly carried out, be alike beneficial to themselves and the public. The improvement in our implements and machines has of late been of an exceedingly encouraging character; we now produce such articles equally good and cheap as do the Americans. The proof of this is to be seen at any of our recent Provincial Exhibitions; and we trust that the arrangements now about being made will tend to aid this most desirable and important object.

As the character of the proposed Museum

should be general and not local, contributions are invited *from all parts of Canada*. We hope to see ultimately not only every county, but township also, represented in this Provincial collection, so that any intelligent stranger,—and we trust there will be many such,—who may pay it a visit, will be able to form a satisfactory idea, with the aid of written or oral descriptions, of the productions and capability of the various sections of the Province. The numerous strangers that visit Toronto may thus acquire correct information of a practical character, at the least expenditure of time and trouble. Specimens of remarkable soils with the underlying rocks, and of the various kinds of manures now more or less used in agriculture, and in gardening, would be acceptable contributions. These, with other productions, would afford ample material for private study and popular instruction in the most useful and interesting of human pursuits.

SCIENTIFIC FARMING.

Written for the Agriculturist.

The great mass of agriculturists in this country, as also in the world, may be divided into two classes. The first great class, containing all but about one in a thousand, are content to go on in the ways of their grandfathers. They *understand* farming fully; they are *practical* farmers. These men add nothing to the knowledge, and but little to the wealth, of themselves or the world at large. They can be disposed of in very few words. The other class are enthusiasts; and under the heading which we have laid down for this article would branch gloriously into a dissertation on salts and sub-salts, soils and sub-soils, acids, gases and improved machinery. The road is equally simple to them, but is a very different one from that of the class referred to. Class No. 2. holds that all farmers cultivate too much ground; that none plough deep enough; that none manure strong enough, that none bestow sufficient attention on fences; that none plant trees and vines enough, that none have sufficient regard to sustain the power of the soil; and in short, that none are sufficiently mathematical, chemical, and generally speaking, abstrusely scientific in their operations. They would induce farmers to subscribe for every agricultural periodical—which every farmer should do, if he desires success,—read every

book, attend every Fair or Agricultural Lecture, and become perfect walking dictionaries in their familiarity with the names and opinions of all chemists and alchemists, from the discoverer of Glauber salts down to the manufacturer of Paine's gas.

In practice it happens almost invariably that these scientific farmers lose, rather than gain, by their own farming operations, and this fact cannot be considered too significant. There is an extreme in this business as in every other, and whether the matter be viewed in an abstruse scientific light, and mathematical formulas and equation be developed to show the state of affairs, or whether we take, in ordinary language, the simple term "judgment" as expressive of the element desired, the fact is indisputable that the truth lies between the extremes, and is a very difficult matter fully and properly to be arrived at.

Rotation in crops is desirable; but how often the crops should be changed with every variety of soils, and with every conceivable ratio of the cost of labour, as compared with the value of the products, is a matter extremely difficult to determine. Rotation involves extra labour. To change pasture to tillage, and this again to meadow, is far more expensive than a continuation of either condition; and the truly wise farmer ascertains or judges as accurately as possible, the point where the conflicting considerations actually meet. Planting trees is most assuredly a good investment in general; but a farm all orchard would necessitate a great expense for fertilizers, and a long and patient waiting for a return. Guanos and artificial manures are, in many cases highly profitable; but unfortunately the knowledge of soils and the capacity to describe them so that every farmer for himself may determine precisely what is wanted, and how much, on his land, and the actual pecuniary result, is yet far from being effected. Improved machinery is highly advantageous, but it is easy to be led into the expenditure of too much, and to be most egregiously imposed on in such devices.

While we are thus free to admit the possibility, in fact, the strong temptation, in those of progressive minds to invest largely in science at the expense of practical results, the great disproportion in the two classes referred to, must be borne in mind, and each reader may ask himself which of the two classes he most probably ranks in. A perfectly reliable and infallible judge-

ment would call for a far larger amount of cultivation per acre, and a greater expenditure for fertilizers and machinery than generally obtains. The mass need no choking in this respect, but the few who do are most likely to be found among the readers of the *Agriculturist*.

Having sufficiently pointed out the danger of over-doing in science, we may the more heartily urge the old grannies to their duty. It is true that nearly every farmer cultivates too many acres of land. It is true that few farmers avail themselves so fully as is profitable of the improvements of the age, either in fertilizers, cultivation, rotation, drainage, irrigation, harvesting or curing. Thousands, yes, millions of dollars are annually lost to the country and to the world through the ignorance and obstinacy of farmers, which a very few dollars of time pleasantly applied to the reading of a still fewer dollars worth of information, would have entirely avoided; while at the same time, the obtuse mind of the hard-fisted labourer would have been expanded and developed, and his capacity and means for enjoyment greatly increased. Store, then, the mind with facts, and diligently cultivate the judgment to discriminate. If reapers and harvesters, ditching machines, sub-soil ploughs, experiments in drainage, &c., cost too much to be expedient for one, club together the neighboring farmers, and make a purchase or experiment. Form associations for mutual comparison of data—this might and should be done in every village of Canada—quicken your perceptions by rubbing together ideas, and multiply your experience by giving others the benefit. Neighboring experiments, where soils, climates, and distances from market are necessarily very similar, are far more valuable in practice than distant ones, which may be paraded with more ostentation. Do not look for *immense* results in any experiment. It is unfair to ignore progress unless the results are three or four-fold the old method. Do not expect a gain of more than 10 per cent, all things considered; but if this can be accomplished every year, or even once, without again retrograding, the result is sufficient to make all the difference between profitable farming and absolute bankruptcy.

If you have cattle to consume it, the Chinese sugar cane may be planted, and very possibly with good effect, as green fodder; but do not, we beg you, expect to make sugar or respectable molasses, without elaborate and expensive ma-

chinery, and a reasonable amount of care and enlightened experience. The Chinese potato is very different in this respect, and may ultimately be of great value as food for man, or as a root to store for winter use in feeding; but a score of experiments in a town are very nearly as good as a thousand, and far better, unless the thousand are properly conducted. There are some whose tastes incline them to such efforts. Aid such "martyrs to science" in experimenting, and compare notes carefully on the results, but do not each spend half the summer in tending these strange plants, covering the joints of the vines, &c., to find at the year's end that you have been *almost* successful.

We have in mind nothing which we care to designate particularly, as imposition on the farming public; but although interested parties are always crying *immense* results, the farmer who expects such from any one step may generally be set down as a deluded man. There are those who are "wide awake" to speculate in novelties; but the great mass must be content to accumulate by carefully and skilfully grouping together almost trifling economies, with a view to produce the greatest possible quantum of finished goods, at the least possible price.

ANNUAL MEETING OF COUNTY AGRICULTURAL SOCIETIES.

The following circular has been addressed to the Secretaries of all County Agricultural Societies in Upper Canada.

BOARD OF AGRICULTURE OF UPPER CANADA.

Toronto, January 5th, 1863.

SIR,—I am instructed by the Board of Agriculture, on the eve of the Annual General Meeting of your Society, for the Election of Officers, and adoption of a Report, &c., which, under the existing Statute, must take place during the Third week in January, to request the attention of your Society to the following subjects:—

The Annual Report and Election of Officers.

The Statute states what information shall be given in the Report, viz. 1. The names of members during the past year, and the amount of subscription paid by each. 2. A list of the premiums awarded, stating the amount of each, and to whom, and for what awarded. 3. A detailed statement of the receipts and expenditure. 4. Such remarks and suggestions upon the Agriculture and Horticulture of the Country, and Arts and Manufactures therein, as the Directors shall be enabled to offer.

It is requisite that the statement of receipts

and disbursements should be very carefully and correctly prepared, showing the exact state of the account; and it is very desirable that the Report should embody under the 4th general division, above mentioned, such information of a practical nature in regard to the Agricultural and Horticultural resources and progress of the County, as would be useful and interesting for publication in the Transactions of the Board.

The Report, after adoption at the Annual Meeting, should be entered in the Society's Journal, and a true copy thereof, certified by the President or Secretary, forwarded to this office, punctually on or before the 1st day of April next.

The Reports of the Township or Branch Societies in your County should be received by your Society at or before your Annual Meeting, and must be forwarded to this office along with your own. You are requested to see that such reports are compiled in accordance with the requirements of the Act, and that the names of the officers elected for the current year are given, before so forwarding them.

The Officers to be elected by your County Society are a President, two Vice-Presidents, a Secretary and Treasurer, and not more than seven Directors. You are particularly requested to forward the names of these, along with the Annual Report, to this office.

The Board of Agriculture.

It is a part of each County Society, at the Annual Meeting, under Section 12, Con. Statute, to nominate four persons to serve as members of the Board of Agriculture.

The Board, as constituted last year, consisted of the following gentlemen, viz: E. W. Thomson, Toronto; R. L. Denison, Toronto; Hon. H. Rutan, Cobourg; Asa A. Burnham, Cobourg; Hon. George Alexander, Woodstock; Hon. Adam Fergusson, Waterdown; Hon. David Christie, Brantford; and Wm. Ferguson, Kingston.

Of the four members who would now retire in regular rotation, the late Hon. Adam Fergusson, who continued a member of the Board from its first organization to the day of his death, was one. He, as you are well aware, departed this life in September last, and the Board would respectfully take this opportunity of expressing to the County Societies their high estimation of the deceased gentleman's many virtues as a man and a Christian, and his eminent services to the country of his adoption as an Agriculturist.

The remaining three members who now retire are Messrs Burnham, Christie, and Wm. Ferguson. Their retirement, however, does not render them ineligible for re-election.

The Statute requires each County Society to transmit the names of the four persons nominated as members of the Board to the *Bureau of Agriculture (at Quebec)* forthwith; and the four persons so nominated by the greatest number of Societies shall be members of the Board in the place of the members vacating their seats.

Agricultural and Veterinary Instruction.

A Class will be formed in Toronto, during this winter, for instruction in the Principles of Agriculture, and the Veterinary Art, specially adapted to the wants of young men engaged in, or intended for agricultural pursuits. Professor Buckland will be assisted in the department of Scientific Agriculture by the Professors of Chemistry, Geology, and Natural History in University College. Mr. Smith, Licentiate of the Edinburgh Veterinary College, and Consulting Surgeon to the Board of Agriculture for Upper Canada, will have charge of the Veterinary department.

This course will commence on *Wednesday, January 21st, 1863*, and continue for about six weeks. Three Lectures a day, and no fees. The subjects treated of will comprise:—

The History, Breeding, Diseases, and Treatment of Farm Animals, including their Anatomy and Physiology, with a course of instruction in Practical Dissecting.

Agriculture in its relations to Chemistry, Geology, Mechanics, Physical Geology and Meteorology, Botany, and Zoology, including Farm Architecture and Engineering, the valuation and management of Landed Property, with special reference to Canada.

Pupils may enter and leave the class without being subjected to an examination. But, with a view of promoting emulation the Board of Agriculture offer the following Prizes, the value to be given in suitable books:—First, \$20 to the student who shall pass the best Examination in all the subjects at the end of the term; Second \$15; Third, \$10; and Fourth, \$5.

Further particulars on this subject may be known by applying, either personally or by letter, to Professor Buckland, University College.

Agricultural Museum.

The Board is about establishing in their new Hall in this city, for the benefit and instruction of the public, an Agricultural Museum, and will be thankful for your assistance in procuring suitable specimens for it. Any members of your Society, or others, who may grow upon their farms, grains, grasses, roots, or other agricultural products, possessing a distinguishing character for excellence of quality, productiveness of yield, beauty of sample, or other marked and useful property, are respectfully requested to send specimens of the same to this office (the samples of grain either in the straw, with the roots attached, or the clean seed,) giving the producer's name and address, and all the useful particulars in reference to the cultivation, amount of produce, &c. Specimens of the seeds of forest trees, named, with location and time of collection mentioned, and of other useful and interesting natural products, will be also thankfully received. Implement Manufacturers are also invited to avail themselves of the advantages of the Museum, for the purpose of displaying to the public the articles they manufacture, either by sending models or the implements themselves.

The Canadian Agriculturist and Journal of the Board of Agriculture of Upper Canada.

The Fortnightly publication of this Journal during the past three years not having been found in all respects so convenient or satisfactory as was anticipated, besides involving a greater amount of labor and expenditure than are compatible with the price at which it is issued, especially in view of the great rise in the price of printing paper, it has been decided, for the future, to publish it *Monthly*, commencing Jan. 1863.

The Journal will, however, suffer no diminution in value or interest, but rather the contrary. Each number will contain not less than 40 pages, illustrated with wood cuts. The Horticultural and Veterinary Departments, in particular, will be enlarged and improved; and the price will be *reduced*, when over 5 copies are taken, so as to encourage the formation of Clubs throughout the country.

The terms of subscription will be as follows: Single Copies 50 cents per annum each. Five to Twenty Copies, 10 per cent. discount. Twenty to Thirty-five Copies, 15 per cent. discount. Thirty-five to Fifty Copies, 20 per cent. discount. Fifty Copies and upwards, 25 per cent. discount allowed.

The Editorial Staff will consist of Professor Buckland, University College, Toronto; Hugh C. Thomson, Secretary of the Board of Agriculture of Upper Canada; and Andrew Smith, Licentiate of the Edinburgh Veterinary College, and Consulting Surgeon to the Board of Agriculture.

All orders to be addressed to the Secretary of the Board of Agriculture.

I beg leave also to take advantage of this occasion to earnestly solicit from the farmers of the country, a greater amount of co-operation than has been heretofore given by them, in filling the pages of the Journal. Communications on any subject connected with Agricultural or Horticultural pursuits however brief or unstudied in composition, will always be thankfully accepted. A large number of contributions of this character, from many correspondents in different parts of the country, would be mutually advantageous to the writers and the readers of the Journal, and would add greatly to the general value and interest of the latter.

I am, Sir,

Your most obedient servant,

HUGH C. THOMSON,
Secretary Board of Agriculture.

NOXIOUS WEEDS.

MR. EDITOR,—Clean cultivation is impossible, however earnestly desired and pursued, while neighboring fields are left to multiply the most noxious weeds. In our own Township (York) a Bye-Law in existence some time ago seems to have become obsolete, as weeds abound to an alarming extent through the township, not only

on waste land partially cleared, but on farms and lots under ordinary cultivation. To every one engaged in Agriculture this is a nuisance which should be abated if possible by most stringent laws in every municipality throughout the Province or by Provincial statute. Besides the unsightly appearance which the existence of weeds (such as the CANADA THISTLE and PIGEON WEED) gives to the field, these fruits of indolence or neglect impose incalculable labor and loss upon the community. I know of one person who recently lost \$200 on the rent of a farm by such means. To accomplish deliverance from such a curse the remedy, to be at all effective, must be simultaneous and general. My attention has been particularly called to this subject by noticing in a late American paper the following measure passed at the late session of the Pennsylvania Legislature, viz.

"Hereafter any individual or corporation in the State allowing the Canada Thistle to ripen on his or their premises, shall be liable to a fine of ten Dollars, upon each complaint that is properly established; and any one who may fear the spread of the Canada Thistle upon his premises from the hands of his careless or thriftless neighbor, may, after five days' notice, enter upon any lands where the thistle is found growing, cut it and claim pay for the labor and trouble."

The limitation with us should not be confined to the Canada Thistle, but should embrace Pigeon Weed or any other which might entail labor and loss upon the farmer. An evil of such magnitude might be more easily remedied by a Provincial Act (if no such act already exists) than by isolated and uncertain By-Laws of our Municipalities.

I am,

Yours, &c.

J. L.

York Township, 14th Dec., 1862.

[Our correspondent is quite right; the great hindrance to clean cultivation and improved farming is, without doubt, the multitudes of weeds which are too commonly to be seen on fields, and what are called gardens, as well as on the highways. We think that there exists a Provincial Statute on the subject. If not, such an Enactment as our correspondent refers to, passed by the Legislature of Pennsylvania, would, if properly applied, meet the difficulty. One would imagine that *self-interest alone* would supply a sufficient motive to persons to keep down weeds: experience unhappily shows the contrary. Hence the necessity of legislation in some form or other. We commend to the earnest attention of Agricultural Societies in particular, the subject of the above communication.—Eds.]

THE POTATO DISEASE.

TO THE EDITOR OF THE "EVENING TIMES."—
SIR,—Permit me through your valuable columns to say a few words about that excellent root, the potato. Much has been said and written on the cause and the cure of the potato disease, and premiums have been offered for many years by the Agricultural Societies of Great Britain for the best essay on the subject; and many an antidote has been suggested, both in Great Britain, Canada and the United States; but all, in my opinion, have failed to effect a cure.

I recollect, some 17 years ago, of reading in a Scotch newspaper, an essay on that subject, written by a clergyman, who had made the potato disease his study for many years, and he explained the cause and cure more to my satisfaction than any other who has written on the subject.

He says we have been working against nature all along in propagating from the root, instead of raising new potatoes from the seed; that the potato, like other vegetable plants, and even the human species, lived to a certain age and then died. Like an apple tree, or a laying hen, they would live after they had ceased to bear; that is, the apple tree would live after it had ceased to bear apples, and the hen after it had ceased to lay eggs. That the age of the potato was 30 years; that it took five years to mature it, and the next five years it was in its full vigour, and would continue to carry its seed until the twentieth year, but ceased to do so after that period, and all the plants raised from the root after that period were weak and subject to disease.

So far as my experience has demonstrated, I must say I have found his theory correct. About four years ago I commenced to work on his plan, and I got two potatoes, just five years from the seed, and planted them in my garden. The produce was about a peck; next year I had a goodly quantity; the next year I had about fifty bushels, and this year I had them growing in a very unfavorable piece of ground, being very low and wet, and they have been almost under water for a period of twenty days; but, notwithstanding, there was not one of them diseased, and during the four years that I have raised them I have never discovered the least blemish or symptom of disease, nor have any of my neighbors, a number of whom got them from me. They go by the name of *Chilis*; are of a dark purple color, very floury, and bear an excellent crop, being large sized and fine flavoured, with no small ones amongst them.

Now, Sir, as I am convinced that the clergyman's theory is correct, so far as I have experienced, I thought proper to communicate with you on the subject, as I consider that anything

having a tendency to promote the public welfare cannot be too widely known.

I am, with respect,

Your most ob't servant,

A FARMER.

Township of Blanshard, Nov. 22, 1852.

THE LANCASHIRE RELIEF FUND.— FLAX VS. COTTON.

TO THE EDITOR.—It might have been opportunely suggested at the meeting held to relieve the destitution in Lancashire, that the growth of flax by the farmers of this district, would, though not immediately, yet hereafter, permanently contribute to the end.

We know that flax affords the best material for mixture with cotton, at a cheap rate, and creates employment for a large population engaged in agriculture and manufacture, enriching both by reciprocal supply and demand.

The townships of Yarmouth and Southwold comprise 144,000 acres, divided into farms varying from 50 to 300 acres. Now allowing 5 acres in flax culture in every 100, these two townships would alone yield a very large quantity of raw material, and of the value to the grower, in straw and seed, of \$300,000.

The farmers account on this crop, exclusive of interest on land, tillage, &c., would average per acre:—

8 tons of straw, at \$8	\$24
20 bushels of seed for feeding, at \$1 per bushel.	20
Total.	\$44
His expenses would be:—	
Two bushel of clean seed, at \$1.50	3
Pulling, stocking and tying	4
Threshing the seed	1
Balance	36
	\$44

The farmers, I am aware, have not the opportunities or conveniences for preparing flax for market, but they can grow good flax by using clean seed and fine tillage.

In my efforts hitherto to promote the culture of flax, I have shown that the business of preparing it for the market, must in this country as in France and Belgium, fall into the hands of the "linier" or flaxman, who purchases the straw from the farmer and makes it a business to ret and scutch it.

For the purpose of showing that flax could be readily prepared for the manufacturer and a market thereby opened to the grower, I imported during the summer from Belfast two of Rowan's patent scutching machines, one of which may be seen in daily operation at Wilson's plaining factory in this town.

I anticipate the time will shortly arrive when retteries will be established in convenient

localities throughout the country, and Rowan's scutchers as common as threshing machines.

The Elgin Flax Association, though it has not accomplished much, has no doubt by the information and instruction it has diffused through the county, brought the value of flax culture prominently into notice, it remains with the farmers to apply practical results.

In the reign of Henry VIII, in the year 1532, an Act of Parliament was passed requiring that every person occupying land fit for tillage, should, for each quantity of 60 acres, sow at least one rood of it in flax each year. The quantity was increased to one acre in the reign of Elizabeth, 1562, under pain of a penalty.

The compulsion to raise flax may not in these days be enforced by Acts of Parliament and penalties, but let us hope by the stimulus to aid the distress and alleviate the sufferings of the manufacturers of Lancashire, who are deprived of their daily bread by the withdrawal of the supplies of cotton.

Your obedient Servant,

B. WALKER.

St. Thomas, Nov. 24.—[*Home Journal*.]

PROVIDING HOMES FOR THE FAMILIES OF IMMIGRANTS OF THE LABOURING CLASSES.

We publish the subjoined correspondence by request, and commend the subject to the consideration of our readers. Although the exact scheme suggested by the Chief Agent of the Emigration office—might not be found feasible in many localities, still the general subject of providing comfortable houses for farm labourers and their families, together with a plot of land for cultivation in garden, or small field crops where expedient, pasturage, &c., is one well deserving the attention of proprietors of land, as intimately connected with their own interests, and the conduct and future progress of the labouring immigrant.

GOVERNMENT EMIGRANT OFFICE,

Quebec, December, 1862.

TO THE EDITOR OF THE AGRICULTURIST,—SIR,
—The accompanying correspondence is submitted for your consideration and should you take the least interest in the matter of which it treats, I beg of you to give it publicity amongst the agriculturists in your neighbourhood.

I am naturally desirous before taking any steps to give the subject effect in the United Kingdom, to ascertain what encouragement the farmers and landed proprietors of Canada are prepared to offer in a cause of such vital importance to the country at large.

There is also another question which I should wish to bring under the notice of our farmers.

Applications are being constantly made to me, by young men of character and intelligence who are desirous of acquiring a practical knowledge of agriculture previous to purchasing a farm on their own account. They are in most instances willing to work for their board, or at mere nominal wages, on being received as one of the family, and some are prepared to pay for the instruction they may receive.

Farmers who are disposed to accept young men on either of these conditions are invited to transmit their proposals to this office.

I remain, &c.,

A. C. BUCHANAN,

Chief Agent.

GOVERNMENT EMIGRATION OFFICE,

Quebec, September, 1862.

To the Farmers and Landed Proprietors of Canada.

GENTLEMEN,

Now that the organization of a scheme for a better system of colonization is engrossing the attention of our public men, and a fresh "stimulus" thereby given to the subject of Emigration, I am induced to suggest to you the importance of devising some means to make provision for Emigrant families who arrive in this country without funds; which, while tending to promote the comfort of the poor Emigrant himself, will prove advantageous to your interests, and beneficial, I hope, to the country at large.

The great drawback against which the head of a poor Emigrant family has now to contend is the want of some "Home," or shelter, where he can place his family, while he goes out to work for their support. From the general lack of such accommodation throughout the country, and the consequent difficulty of procuring it, the majority of our Farmers give preference to the employment of single men, much to the detriment of a class of laborers who have within them the elements of a steadier success. To remove this objection, I venture to suggest that proprietors of 200 acres lots should set apart one cleared acre adjoining 10 uncleared acres of land; that they should build thereon a habitable log cabin, fit for the occupation of an Emigrant family, letting it to them for a term of years: the rent to be made payable in labor or in money, as might be agreed upon; or some such arrangement as the following might be made:—That the Emigrant should rent the lot ten years, he giving one day's labor in the week, by way of payment, with the proviso that if within five years he clears and puts under crop five acres, no further rent will be required for the rest of the term; but should he fail to do so, then the bargain would be annulled. An arrangement of this sort would have the effect, if widely adopted, of securing immediate provision for the newly arrived Emigrant, and the Farmer affording this accommodation, would thereby acquire labor with

out paying money for it: at the same time improve his land, and attach by kind treatment, to his interests, a family whose services or assistance might, in many instances, become of incalculable value to him.

In giving publicity to this letter I am influenced by a desire to attract the attention of practical men to the exigency I refer to, in the hope that the question may be fairly dealt with, and I earnestly advise all who may feel disposed to act upon my suggestions, to put themselves in communication with this Office, stating what accommodation they are prepared to offer, and such information will be brought before the Emigrant on his arrival here.

I am, Gentlemen,

Your Obedient Servant,

A. C. BUCHANAN,
Chief Agent.

The following are extracts from letters, addressed to Mr. Buchanan upon this subject.

HOPEFIELD, OPEONGO ROAD, COUNTY OF
RENFREW.

November, 21st, 1862.

After giving to your suggestions as contained in your late circular a good deal of consideration, I am so fully impressed with the benefit mutually to be derived by its adoption by the emigrant, the farmer and the Government, that I in conjunction with a few others have decided upon giving it a trial on as extended a scale as the means at our command and the field of our operations for the purpose will admit of. A few alterations have been made which it is thought will meet your approval, but in many instances could not be generally adopted. Of its success for the following reasons we are so confident that we only look to Government for its cooperation by forwarding the intended settler to this place

To this end we intend laying off six hundred acres of which we are in possession, being 300 acres on either side of the main Road fronting each other and having a frontage of nearly a mile, into sixty lots of 10 acres each. Each lot being well watered. On each of those we intend erecting a dwelling 20 x 24 feet and clearing around it one acre to be ready for crop on the opening of spring. The settler on his arrival can at once proceed to put in his crop and turn round and assist his older established neighbors in doing similarly, for which he will receive payment in most cases in produce that he must require delivered to him, which is better to him than cash, as with the latter he would be obliged to look for what he required and lose time in doing so, and of demand for labor in this vicinity there is no laxity.

Very many settlers of old standing have seriously crippled their first footsteps by being the possessors of too much land, running over its surface carelessly and slovenly, whereas one-half

attended to and receiving the same amount of labour would have yielded a larger return. Believing in a small farm well tilled we are of opinion that for the first few years of a settler's life, 10 acres will be found quite sufficient for his requirements. By our plan he is not bound in any manner to his holding as he can by a months notice of his intention to remove himself to any other location, do so; and this is required so as to be able to communicate to your office any vacancies as they may occur, that they may be filled up. Our intended settlement being thus nothing more or less than a depot or school, from whence the scholars can when opportunity offers of bettering themselves issue, and in which they will learn the various branches necessary for their future success, and of which on their advent they are of necessity ignorant, getting their maintenance during their stay and accumulating a little store as they proceed. I may here mention that should our trial be successful, of which we have little doubt, it could be enlarged and improved by the immediate action of Government in any wished for locality and to any extent. But the great difference in our plan and your suggestions is this, that whilst by yours the Emigrant never becomes the proprietor of his holding but pays a day's labor per week for the occupancy thereof, we will permit him to become a purchaser at the expiration of three years, of his holding and its improvements for the sum of fifty dollars. Thus not in any way curtailing him in the amount of either labor or capital he may expend thereon, and this we consider a great boon to the settler, as in the mean time he can improve, well knowing he can become the sole possessor of those improvements at the expiration of three years on the above mentioned payment, when he can either sell or remain as suits him, and should the settlement become prosperous he can sell building lots on the front to pay the cost of the entire, and this in the case of mechanics is a decided advantage.

Four buildings have been erected already and the necessary clearances for eleven more have been made and we only await some encouragement to proceed with the entire to the completion so as to have them ready for occupants on the arrival of the spring fleet. I have written a letter to the *British Whig* which explains fully the terms of settlement, and have in course of preparation a map of the adjoining Townships and an advertisement in reference to the subject which I will forward you on their issue for distribution to your correspondents. If the encouragement is extended to us we will be prepared to receive forty families in the spring.

HENRY READ,
Agent for the Proprietors.

To A. C. BUCHANAN, Esq.,
Chief Agent of Emigration,
Quebec.

*Copy of a Letter received from Mr. George Craig,
of Southampton, C. W.*

COUNTY OF BRUCE, C. W.,

Southampton, 18th September, 1862.

SIR,—In the "*Montreal Witness*," of the 15th June, I have seen a circular referring to how Emigration of the right sort is to be promoted, which I highly approved, both as regards its theory and practice, and which should be taken into consideration by every Agriculturist, both for the benefit of himself and also of the poor Emigrants who are daily arriving on our shores, but who do not know what course to pursue in order to procure a support for themselves until they become acquainted with the Country. And as I am a farmer in this County and own considerable land, I would like well to get some Emigrants on part of it, and would quite agree with you in your suggestion as to the way they should get it, viz: Suppose from 10 to 50 acres with some clearing and a comfortable "cabane" thereupon was given to such, for a term of 2, 3 or 4 years with the understanding that they should clear and work for you what is reasonable for it. Thereby gaining for themselves a comfortable support, and also improving the land for their employers. Now, I will give 10 or 12 Emigrant families such a chance myself, and can also assure you that many other parties in this place would do the same. And take it upon the whole the County of Bruce cannot be surpassed for such persons to steer to when they land in Quebec. As it is a new country with good land, and a healthy climate, good steady hands who have been 2 or 3 years in the Country get from \$12 to \$18 per month, and I think it right to inform you as head of the Emigrant Office to let all such know where they find plenty of work at liberal wages. They can get here pretty easily from Quebec—by Rail to Toronto, thence to Goderich and by boat to Southampton.—Time from Quebec about 4 days, distance 697 miles.

I am, Sir,
Your very Obedient Servant,
GEORGE CRAIG.

*Extract from a letter received by the Chief Agent,
from Scotland.—October, 1862.*

I hope to have a large party to send out next spring; your circular is excellent, and the proposal made just meets the want, that has always frightened me for my poor people, I hope your Canadian proprietors will respond to it warmly.

CHRISTMAS-DAY ON A THURSDAY.

Peterboro, C. W., Christmas-day, 1862.

TO THE EDITOR OF THE "CANADIAN AGRICULTURIST."—Dear Sir,—The occurrence, this year, of Christmas-day on a Thursday reminds me of the following lines, with the name of whose author I am, however, unacquainted. They ap-

pear among the celebrated papers deposited in the British Museum, and known as the "Bibliotheca Harleiana." Not having that work at hand for reference, I can give no more than the fragment I have transcribed. It may not prove uninteresting to such as are in the habit of noting the signs of the Seasons, as well as "the signs of the Times," and of recording passing events as well as passing storms, to bear these verses in mind, and compare them, occasionally, with what transpires both above and upon the earth; and thus, to a certain extent, ascertain whether the old Author was warranted, and if so to what extent, in penning his quaintly-poetic prophecy. The Harleian MSS. were collected partly by the first and partly by the second Earl of Oxford, the latter of whom died in 1741.

"If Christmas day on Thursday be,
A windy winter you shall see;
Windy weather in each week,
And hard tempests, strong and thick;
The summer shall be good and dry,
Corn and beasts shall multiply;
That year is good for lands to till,
Kings and Princes shall die by skill;
If a child that day born should be,
It shall happen right well for thee,
Of deeds he shall be good and stable,
Wise of speech and reasonable.
Whoso that day goes thieving about,
He shall be punished without doubt;
And if sickness that day betide,
It shall quickly from thee glide."

I am, dear Sir,
Yours faithfully,
VINCENT CLEMENTI.

FLAX SCUTCHING.

In the first place, sufficient interest is not taken by any party in connection with flax scutching. The farmer is in a hurry to get scutched, the mill-owner to make money, and the scutcher to make wages. Thus all parties concerned being in a hurry, no wonder that the work is slovenly and badly done. The millowner never thinks of taking the responsibility of standing between the farmer and the scutcher; the entire management and control therefore devolve on the scutcher, and he very easily persuades the farmer that he should not get his flax all scutched away. This the farmer agrees to, and desires the scutcher not to scutch his flax too far. Now, though this be well meant on the part of the farmer, it is taken advantage of by the scutcher. He will, consequently, scutch it both roughly and hurriedly. The secret of all this is—the scutcher makes more wages, the millowner more money, but the poor farmer sustains more loss. Again, a millowner does not think of losing his time with the supervision of two, four, or six stocks or stands; and even in the larger mills the owner may not take the responsibility of the

management, but appoints as manager one of the scutchers themselves. By this means the most valuable portion of our produce is put into the hands of the most uneducated portion of the community, and the farmer is left entirely at their mercy. Now, after twenty years of close and unremitting attention to flax scutching, I can unhesitatingly state, that from £3 to £4 per acre is lost to the farmer by *hurried* and slovenly scutching. There is, in addition to this, another great mistake from the state in which the farmer brings his flax to the mill, often in so damp condition that it is ruinous to scutch it. On this point I have had some hundreds of experiments, and all were in favour of flax being scutched in a dry state. In some instances the loss is to an extent almost incredible, some lots giving double the amount of fibre when dry than when in a damp state, and the quality is greatly improved. I therefore hold that there are great waste and loss, and one of the chief causes of bad scutching, by putting into the scutchers' hands flax in a damp state. There should be a means of drying all flax scutched in the winter months, and steam is the only safe drying, all other means being either injurious to flax or dangerous as to fire.

I particularly wish to call the attention of flax-spinners to the plan of drying the flax by steam, as not only quality, but quantity is improved, and that to an extent they would scarcely credit. However, should they have any doubt, by sending a deputation of two or more flax-buyers, to my mills, I will let them see a series of experiments that will convince them that steam-drying of flax is a great improvement in every way. Now, every means should be resorted to that would either improve quantity or quality in these days of want of cotton. Spinners should be the first to set the example, and let them begin where the Royal Flax Society left off, namely, at the scutch mills. The farmers have been very well instructed how to do their part to flax; it is only when it comes to the mills that there is a want of skill and care. I would therefore say that the spinners, as a body, should form a society or committee, and erect one or more model scutch mills, and experiment on them, giving to the country the benefit of experiments, and also training young men and fitting them to take management elsewhere through the kingdom, as the want of such is a great drawback. Many new districts would commence growing flax were there a facility of obtaining such skill. Every young man should be able to superintend the erection of the scutching department of a mill, as also to train scutchers, &c., &c. With such facilities many new districts would commence flax culture. It is now quite evident that machine scutching will not supersede the established system. The present scutch mill, when well fitted up and in good working trim, is in

itself an admirable machine, and well adapted to take the shoves out of flax. Its action cannot be excelled; and when we add to that a well-trained scutcher, I would say that as long as he does his part well, no machine will be able to compete with it. I have had many experiments on this, having invented the first cylindrical scutching machine, which obtained a medal at the Dublin Exhibition some ten years ago. In course of inventing this machine I had many experiments with the present system, and invariably found that a well-ordered mill and a good scutcher could come out with long odds. We should, therefore, look after and try to improve what experience teaches us is the best machine. To do so we should have the flax brought into a suitable state by *steam* drying, (none other being so safe or so good). It will then be in a fit state for the scutcher. In fact none but those who have seen it can imagine the difference there is in scutching a dry, as compared with a damp, strick of flax; and all the fine flax is as much improved in quality as quantity. When prepared in this way with steam drying, and carefully put through our patent rollers, then it is fit to be put into the scutchers' hands, but not before. The scutcher should have a well-ordered stock or stand, with eight wipers or knives on a rim of four feet diameter, the wipers being ten inches projecting from the rim and nine inches broad, and travelling at a speed of about 200 revolutions per minute, being the maximum speed, and ranging from that down, according to the quality and firmness of fibre. Now, I hold that such a machine has not hitherto been equalled for scutching our Irish flax—for refining the fibre and preparing it for the spinner. I have minutely examined all the processes that flax goes through preparatory to spinning, and unhesitatingly state that the scutch-mill is the place to take out the shoves and refine the fibre with the greatest saving for both quantity and quality (always supposing the scutcher to do his duty). Let, therefore, one or more model scutch mills be erected on these principles, which I will explain (if required) more minutely and accurately, and managed on the rules I have stated, and I will guarantee a vast saving of flax to the country, as well as greatly extended culture. The flax fabric will now be called in to make up the void of cotton; hence the present is the most fitting time to develop flax culture and management, that it may not again lose the place it is now likely to take. Should any nobleman or society take up the subject, I will feel pleasure in imparting such information and instruction as my long experience and close application to flax-scutching have given me, as well as the result of my many experiments. I am, sir, your very obedient servant, WM. BAIRD, Mullanboey, Castlefin, Co. Donegal, September, 1862.—*Belfast Morning News*.

LIEBIG ON AGRICULTURE.

Baron Liebig, the world renowned chemist, is publishing in the *Bavarian Gazette*, a new introduction to his well known "Agricultural Chemistry" which is just coming out in a seventh edition. The following extracts will afford material for thought to agriculturists generally; and though they have a special application to England, the suggestions implied or expressed will be found to have no unimportant bearing on our Canadian agriculture. It is a fact too palpable to admit of doubt, that both in the neighboring States and in Canada, thousands and tens of thousands of acres of land formerly rich and highly productive, yielding profitable returns, have now become, in consequence of the exhaustive system of tillage comparatively barren, and in some cases abandoned.

"Exhaustive agriculture (Raub-Bau), which renders the country a desert, and makes it unfit for human habitation, may be described in a very few words. On a virgin soil, and during the first period of its subjection to the plough, the farmer sows his corn, year after year, in the same ground. When a deterioration of the crop becomes visible, he passes on to another field. As population increases, this extension becomes more and more limited, and the farmer is confined to one and the same plot, different portions of which are successively left to lie fallow for a time. The yield goes on decreasing year after year, and the original fertility is now sought to be restored by the artificial resource of manures. The meadows are gradually absorbed in the process, and the three-field system introduced. But as these resources do not hold out for ever, the production of manure by the cultivation of fodder becomes a necessity. The lower depths of the soil are used for the rearing of plants originally confined to the meadows, until at length these, too, are exhausted. Peas are first employed for this purpose; shau-rock, turnips (Rube), and potatoes then follow in disastrous succession. At length cultivation becomes impossible; the soil being no longer able to produce crops. This is a process that may extend over many hundreds of years, and in some cases even up to a thousand. At length the exhaustive effects of his labour reach a point when they become too clearly visible; expedients are then resorted to one after the other, each of which recognises the deterioration of the soil.

"English agriculture will best exemplify the disturbance of nature's economy on the part of a highly civilized nation. In the last quarter of the eighteenth century was com-

menced the importation of bones into England, which continues uninterruptedly to this very day. The importation of guano began in 1841; in 1857, 286,000 tons were brought to England, while the average importation of bones had risen to from 60,000 to 70,000 tons a year. One pound of bones produces in three seasons 10 lbs. of corn, while 1 lb. of guano in a course of five years makes 5 lbs. of corn. It may be supposed, without danger of falling into a mistake, that in the 50 years between 1810 and 1860 4,000,000 tons of phosphates have been imported into England in the form of bones, linseed cakes, rape-seed, &c. These, in the same time, have produced 40,000,000 tons of corn, sufficient for the sustenance of 110,000,000 of people. Supposing that, from 1845 to 1860—that is, in 15 years—the English fields have received an addition of 15,000,000 tons of guano, the corn produced by this artificial manure must be estimated at 7,500,000 tons, sufficient to feed 20,000,000 of people. Again, it is self-evident that if the phosphates imported since 1810, and the guano forwarded to England, since 1842, had not exhausted part of their productive power by employment upon the fields, these fields would have possessed in 1861 the essential conditions for the production of food for 130,000,000 of people. But with this calculation must be contrasted the astounding fact that Great Britain is not even able to produce the amount of food required for its 29,000,000 of inhabitants. The introduction of closets into most parts of England results in losing annually the material capable of producing food for 3,500,000 people, the greater part of the enormous quantity of manure annually imported by England being regularly conveyed to the sea by its rivers, and the crops grown not sufficient to feed the ordinary increase in the number of its inhabitants.

"Although not in the same proportions as in England, the same process of self-destruction is going on in every European country. In all the great towns of the Continent large sums are annually expended by the authorities in order to make the material requisite for the improvement of the fields unattainable by the farmer. In Bavaria, for instance, one of the richest and most fertile countries of Germany, the average crops of the Danubian districts, although proverbially abundant, have been found to decrease year after year, and are already inferior to those in the Palatinate. To form a correct notion of what is shortly in store for Bavarian agriculture, it may be sufficient to mention in this place, that a single factory at Henfeld, in the course of last year, only exported seven hundred and fifty tons of bone powder to Saxony, where its value is no doubt, better understood than here. For twenty-five years past the exportation of phosphates from Bavaria has steadily increased, and the figures just given

for the Henfield factory are only a small fraction of the entire amount. In Munich alone one thousand two hundred and fifty tons of bones are annually procured, which for greater part are exported as fast as they can be obtained; and I believe I am right in estimating the sum total of bones exported from Bavaria at something like six thousand thalers a year. Large as this quantity may appear, it is yet no more than what is imported every two years into the one district of Bautzen, in the kingdom of Saxony. With each hundred weight of bone powder, however, the essential conditions for the reproduction of two thousand six hundred pounds of wheat are withdrawn from the Bavarian fields, thus running up the annual loss of corn to one hundred and fifty thousand tons. Still, the loss in this particular is only a small fraction of the agricultural requisites wasted in the towns by the supineness of the authorities and the indifference of the inhabitants. For centuries past considerable wealth has accumulated in Bavaria from the exportation of corn—the country, in accordance with a law of nature, losing in the value of its soil what it gains in silver and gold. It is asserted that even now the annual crops of Bavaria exceed 84,500,000 cwt., which is the amount required for the sustenance of its population; but I believe that, if the statistical data collected were more exact than they are, the boast would appear to be founded upon an error. At all events, it is impossible for the surplus production to continue for any length of time, the diminution beginning directly upon the attainment of the extreme limits. The preservation of prosperity in a country essentially depends upon keeping open its sources, and Bavaria, as an agricultural country, is more than any other German provinces interested in maintaining its fields at the due standard of fertility, which as I have said, is very much the reverse of what is actually the case. The greatest danger in all these things is to ascribe any value to the opinions of the farmers themselves, many thousands of whom are neither able to judge the qualities of their soils, nor to account, correctly and scientifically, for the results of their cultivation.

“There is nobody knows the sum total of nutritive elements in the soil, and it is but thoughtless to suppose it to be inexhaustible. What the soil really includes, I repeat, nobody knows; though what it yields everyone may easily ascertain for himself. The great object in view is not to extort the greatest possible quantity out of the soil, but to learn to economise our resources. A boy may calculate the amount of productive power left in a field after a hundred years, even though only one-half per cent of its original value should be annually taken out of it; but the addition of this half per cent a year, if he would learn to provide for it, would make it yield the same crop for another hundred years, and, in fact, for an un-

limited time. Suppose only one-fourth of the essential conditions for the reproduction of corn to be annually lost in Bavaria, the sum of this deficit in one hundred years amounts to no less than 860,000,000 cwt. No land is rich enough to make up for its waste after a certain time; and even though it were sufficiently wealthy to purchase all the manure required for the purpose, there would be no market at which it might be obtained. It is all the more difficult to employ the right medicine against the chronic malady eating away the heart of the European populations, inasmuch as the patient does not believe in the existence of the disease. The populations of Europe resemble a man suffering from consumption, whose looking-glass offers him the deceitful image of health, and he only complains of a feeling of fatigue in his limbs. The agriculturist of the day equally complains of some little fatigue in his fields; but for the rest, considers them sound in wind and limb. The consumptive patient thinks that a little wine would restore him to his former condition; but, if he takes it, the progress of his malady is only accelerated. The agriculturist of the day being equally of opinion that a little guano would do his fields good, in most cases only brings them nearer the day of utter exhaustion. Years pass by before an insolvent husbandman may be actually obliged to declare bankruptcy; and it is not before he has impoverished all his friends and relatives, and carried his last silver spoon to the pawnbroker, that he abandons the deceptive hope of a change for the better. The gradual reduction of the peoples of Europe to a condition of impoverishment and depopulation is also a slow process, growing on for centuries for its ultimate consummation; yet, the day is marked down when in all European counties the children will experience that they have to suffer for the sins of their fathers. No nation has contrived to continue its existence, unless it knew how to preserve the conditions physically essential to its sustenance; and all those countries of the globe where the fields had not been restored to them by the hand of man the elements necessary for the return of crops, we may follow in their downward course from a period of the densest population to the ultimate condition of barrenness and desolation. It is vain to hope that a field in Greece, in Ireland, Spain, or Italy, which is known to have once yielded abundant harvests, will ever return anything like them, even though subjected to the highest cultivation. Emigration from Ireland must continue for a century longer, and never will it be possible for the population of Spain or Greece to exceed a certain and very limited number. Great Britain deprives all countries of the conditions of their fertility. It has raked up the battle-fields of Leipsic; Waterloo, and the Crimea; it has consumed the bones of many generations accumulated in the catacombs of Sicily; and now annually destroys

the food for a future generation of three millions and a half of people. Like a vampire, it hangs upon the breast of Europe, and even the world, sucking its life-blood without any real necessity or permanent gain for itself. It is impossible to imagine that such a sinful disturbance of the Divine order of things should be allowed to go on for ever with impunity; and the time will probably arrive for England, earlier even than for the rest of Europe, when, with all its wealth in gold, iron, and coal, it will not be able to repurchase the thousandth part of those essential conditions of life so frivolously wasted for centuries past. I am fully conscious that nearly all practical agriculturists insist upon the implicit correctness of their methods, and that they are filled with a belief in the permanent fertility of their estates. This circumstance it is which makes people so indifferent to the future, so far as it depends upon the produce of agriculture; and thus it has probably been with all nations who have brought about their extinction by their omissions and commissions. No political wisdom will be able to protect the States of Europe against a similar fate, unless both peoples and governments should be at length prevailed upon to pay a due amount of attention to the growing symptoms of an impoverished soil—the solemn warnings of history and science.”

BRIEF NOTES ON THE HISTORY OF BRITISH AGRICULTURE.

Agriculture as an art goes back to the very beginning of the human race, as we are informed by sacred history, that our first parents were placed in a garden to dress and to keep it, and that of their first two born sons, one was a “keeper of sheep,” and the other a “tiller of the ground”;—thereby indicating that at the beginning, this ancient art was divided into the two great departments, viz: tillage and grazing, in which it has continued to the present day.

It is not a little remarkable that an art so ancient and indispensable as Agriculture, upon the success of which mankind in general depend for their daily bread, and the raw material which their ingenuity works up into articles of comfort and ornament, should, during the earlier and far greater period of its growth, be absolutely without a history. We are dependent for the very limited and imperfect knowledge we have of this important pursuit for several thousand years, to mere incidental allusions by ancient writers, and the symbolical representations that have been discovered in works of art. One would have naturally imagined that a pursuit so essentially connected with the physical existence and well being of mankind, constituting in fact the only solid basis of the wealth and independence of nations, would have found ready and truthful chroniclers of its state and progress, in every age, by all races at all removed above the condition of

barbarism. Historians, however, not only in ancient—but also in modern times, have been too prone to limit their investigations to the intrigues of courts, and deeds of war and rapine; so that in vain we look to their works for any full or satisfactory information relative to the inner life and industrial progress of the people. In this respect Agriculture has shared the common fate of the other industrial arts; an extremely scanty knowledge of the state of which, up to a comparatively recent period, we can only acquire by a patient collection of here and there an occasional reference by writers of the ancient and medieval periods of the world's history, and what has been preserved and discovered of the remains of the industry and arts of preceding ages.

That most singular and interesting country,—Egypt,—whose history goes back to the infancy of the race, we learn was not only the cradle of the sciences, but also the granary of the world. And although we can form but very imperfect notions of the condition of our art among the ancient Greeks, from the meagre information respecting it that has come down to us in their writings, yet there is reason for believing on good authority, that a considerable number of authors among that polite and learned people treated of the subject of Agriculture, but that their writings have been irrecoverably lost. The Greek mind, however, was far more speculative and less practical than that of their successors,—the Romans,—of whose agricultural knowledge and practices very interesting and trust-worthy information has come down in the works of their poets and historians. No one can impartially consult the Roman bucolic writers without receiving a conviction that that valorous people were far advanced in this practical art, and that in a number of important particulars their writings will favorably compare with similar productions of modern date. Indeed, if the practice of the ancient Romans reached the standard laid down by several of their rustic authors, we can hardly, in the present day, be said to have got much the advance of them in several important operations of practical husbandry. And to this adventurous people the modern nations of Europe are greatly indebted for their literature, civil polity and arts; including particularly that of agriculture. Wherever Rome carried her victorious arms, and planted her eagles, she planted also her arts, and taught ruder nations,—our own loved Britain among them,—the principles and practice of improved husbandry.

Pliny informs us that Cresinus, an ingenious but humble Roman husbandman, by superior knowledge and industry so far succeeded in raising greater crops, and therefore obtaining larger profits than most of his countrymen, that the envy of his neighbors became so much excited that they brought this accusation against him:—“That by sorcery, charms and witchcraft he had transported his neighbor's fruits,

fertility, and increase to his own fields." For this he was ordered peremptorily, by Albinus, a Roman general skilled in agriculture, to answer the charge before him. Cresinus fearing the issue, resolved upon his best defence, brought his plough and other rural implements, and displaying them openly, together with his daughter, a stout, strong and handsome lass; then turning to his fellow citizens said; "My masters, these are the soceries, charms, and all the enchantments that I use; I might also allege my own travel and labour, my early rising and late sitting up, and the painful sweat that I daily endure; but I am not able to present these to your view, nor to bring them with me into this assembly." This bold, ingenious, and we may add truthful defence subdued the jealousy and hatred of his assailants. Cresinus was pronounced not guilty; and it is said that his opposing neighbors had the good sense to benefit afterwards by his improvements and example. This incident is only one of a very numerous class, showing that it is the common lot of discoverers, and reformers to incur the jealousy, mistrust, and not unfrequently the persecution even, of their neighbors and fellow countrymen.

As the agriculture, commerce, and institutions of the British Islands are essentially connected with the interests of the Colonies and dependencies of the Empire,—including no small portion of this mighty continent of America,—in tracing a few of the salient lines of the state and progress of British Agriculture, we shall be the better prepared to understand and practice our own. For it should ever be borne in mind that the great scientific and practical principles of this noble and useful art are essentially the same all over the world; and that it is the province of reason and experience to modify their practical applications so as to meet the varying conditions of soil, climate, markets, &c.

The Norman conquest was no doubt in many respects a great benefit to the agriculture of England, then in the rudest state, by the introduction of improved practices from a more advanced country, but the subsequent disposition of the Norman Kings to turn smiling corn fields and green pastures into wild hunting grounds, was injurious to the progress of agriculture as it was to the prosperity of the nation, often resulting in a most exasperating tyranny. The profound and faithful historian of the Middle ages, Mr. Hallam, in reference to these matters observes: "The exclusive passion for the sports of the field produced those evils which are apt to result from it; a strenuous idleness, which disdained all useful occupations, and an oppressive spirit towards the peasantry. The devastation committed under the pretence of destroying wild animals, which had been already protected in their depredations, is noted in various authors, and has also been the topic of popular ballads. What effect these must have had on agriculture it is easy to conjecture. The levelling of forests, the draining of morasses, and the extirpation of mischievous animals which inhabit them, are

the first objects of man's labor in reclaiming the earth to his use; and these were forbidden by a feudal race, whose control over the progress of agricultural improvement was unlimited, and who were not willing to sacrifice their pleasures to their avarice."

From the fifth to the eleventh centuries, when the nation was frequently embroiled in feudal wars, agriculture, like the other arts, found a refuge in the religious houses, and was both encouraged and improved by the sacerdotal orders. "We owe,"—observes a modern writer, the agricultural restoration of great part of Europe to the Monks; they chose, for the sake of retirement, secluded regions, which they cultivated with the labor of their own hands. Several charters, are extant granted to Convents, of lands which they had recovered from a desert condition. To the Benedictine order, severe labour in the acts of tillage stood in the somewhat strange double capacity of an usual penance, and a favorite occupation."

The Monks were in fact, not only the most advanced agriculturists, but the best landlords in the highest acceptance of the word. Connected by the ties of ecclesiastical dependence and intercourse with Rome, the fact at once of their supreme authority, and of whatever still remained to the world of ancient art, science, and literature, and employed in the transcription of manuscripts, whose language was a sealed repository of knowledge to all but their own order, they kept alive the embers of past learning and civilization, which were otherwise threatened with an utter extinction; and though the georgical writings of Greece and Rome were deficient in that one great preliminary of northern Agriculture, the subject of Drainage, it may be readily conceived from the works of the Roman writers that the mental influence of their studies would be more or less perceptible over the lands of proprietors thus comparatively enlightened. Extensive draining operations were commenced, and successfully carried to completion by the religious houses, in various parts of the kingdom; such as the fens of Lincolnshire and Somersetshire, of Romney Marsh in Kent, during, and subsequent to the reign of Edward the first. Some of these districts are still known by the names of the ecclesiastical dignitaries who commenced or carried out their reclamation as "Becket's Marsh," "Boniface's Marsh," and "Baldwin's Marsh," forming that rich and extensive alluvial tract along the Kentish coast, now denominated Romney Marsh, so celebrated for its large long woolled sheep. There appears to have been considerable improvement effected about this period in the rude agricultural implements which had come down from still remoter times. The value of manures began to be appreciated, and their application to the crops better understood. Some of the more far seeing and close observers seem to have had an indistinct idea of the benefits of rotation, and the legislature made enactments relative to the proper preparation of the soil for cropping, and the keeping of the ground free

from weeds,—matters which, even in the present age, if they do not need the interference of government, imperatively require stricter attention on the part of too many cultivators.

British husbandry can scarcely be said to have possessed a literature before the sixteenth century, at the early part of which books treating of its practical principles and routine began to appear. The earliest treatise of much importance by an English author was "*The Boke of Husbandrie*," by Sir A. Fitzherbert, lawyer and judge; it appeared in 1534, and the author refers to himself as "*a farmer of forty years' standing*." In those days a Chief Justice of the Common Pleas did not consider the pursuit of agriculture below the proper dignity of his position. The learned author has left all posterity a valuable legacy in his "*Boke of Husbandrie*," which is a most remarkable production for those times, and which for expression, brevity, and clear descriptions, has, perhaps, never been surpassed, if it has been equalled, either in ancient or modern times. Condensing his remarks into the space of one hundred pages, with a terseness almost unrivalled, he points out with the greatest clearness the prevailing bad practices of the day, and the improvements he thought needed, some of which are equally applicable to our own times, and to this, as well as many other nations of the British Empire. The practice of having deep stubble to be mowed at leisure late in winter, when much of its manuring ingredients have undergone chemical changes and disappeared, he condemns, as though he was acquainted with the doctrines and results of the modern science of agricultural chemistry. And in reference to what is felt by many in the present day—the too great disparity between the size of many farms and the number of cattle kept thereon, he says:—"A housbande cannot thryve by his corne without cattell, nor by his cattell without corne;" adding, "sheep in myne opinion is the most profitablist cattell that any man can have." He makes but little mention of lime, a circumstance indicating that it was not largely used in his day; but of marl he frequently speaks and commends.

The following passage from one of the celebrated Hugh Latimer's discourses, preached before Edward the sixth, will afford some idea of the value of land and the state of the farm and family of a British yeoman of the sixteenth century:—"My father was a yeoman, and had landes of his owne; only he had a farme of three or four pound by yeare at the uttermost; and hereupon he tilled so much as kepte a half dozen men. He had walke for a hundred sheps, and my mother mylked thirty kyne. He was able, and did find the king a harness, with himselfe and hys horse, whyle he came to the place that he should receive the kynges wages. I can remember that I buckled his harness, when he went into Blackheath felde. He kept me to schole, or elles I had not been able to have preached before the Kinge's Majestie now. He

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married my sisters with five poundes, or twenty nobles a pece; so that he brought them up in godliness and fear of God. He kept hospitalitie for his poor neighbours, and some alms he gave to the pore, and all things did he of the same farme."

To be continued.

BUCKWHEAT FOR MILCH COWS.

Buckwheat is not regarded as either a safe or profitable crop as a rule. But latterly when buckwheat cakes and refined sorghum syrup form the staple for breakfasts in city and country during the fall and winter months, this grain is growing in favor among farmers. The danger from early frosts, and the adherence to the theory that good crops cannot be grown unless the seeding is delayed until July, prevents the investment of labor and capital in it that would otherwise occur. It is safe and best, if seed is the object, to sow before the 10th of June in this climate, (Illinois.)

The buckwheat plant is valuable forage for stock while in bloom. It is said to be more nutritious than clover. It is valuable as a forage for bees at the same time.

In conversation with a gentleman who owns and milks two hundred cows, and sells their product in Chicago, I ask him what kind of feed would produce the most milk of good quality? He replied that he fed many tons of middlings every winter, but there was no feed that he had used that would produce so much milk as buckwheat meal. Cattle are fond of it, and it aids the secretion of milk wonderfully. It is often fed underground, and is regarded as very nutritious—a single bushel equal to two bushels of oats as a horse feed. The milk farmer referred to said he regarded it as the most profitable grain crop he could grow for his husbandry. Whether or how it affects the quality of the milk I cannot say; or whether the feed is better mixed with a lighter food, and fed wet or not I had no opportunity to inquire. Its value for this purpose was new to me, but may not be to some of your readers; if not, their experience will be interesting.—*Rural New Yorker.*

SKETCHES OF THE DIFFERENT BREEDS OF CATTLE.

Durhams or Shorthorns.

The origin and early history of this celebrated breed of cattle are points involved in considerable obscurity. It has been called at different times, "Dutch," "Durham," and "Leicester," and did not originate as is often supposed in the county of Durham. There can be little doubt of its Dutch origin;—that is to say the stock imported from Holland became crossed with the better specimens of the large, medium-horned cattle, which for centuries existed throughout the east and north-east of England. In the fenny parts of Lincolnshire and adjoining counties the cattle

were distinguished for ages by their great bulk and coarse figure, with small short blunt horns. But we are informed that northward of the vale of Trent, and thence across the Ouse, through the central plains of Yorkshire, to the river Tees and beyond it, the cattle assumed a less gross and unwieldy form, but were still a very tall race, of varied colours, with horns of medium length, or short in comparison with the prevailing long-horns. In comparing these varieties of cattle with the races of the opposite continent, the large dingy breed of the fens may be compared with the native black cattle of the flats and marshes of Holland, and the more varied kinds north of the Humber, with those of Holstein and Jutland, whence the finest cattle of the north of Europe have been derived. It is not unreasonable to believe, that the latter during the early period of Saxon colonisation, may have been brought to the country of the Jutes and Angles who settled in this part of England.

It is to be regretted that a better record of the different early imports of these cattle does not exist; but sufficient proof is extant that several breeders more than a hundred years ago, made trips to Holland, and selected some of the best bred cattle of the country for improving their own stocks. The earliest importations seem to have been made to the East Riding of Yorkshire, the port of Hull affording then as now great facilities for intercourse with Hamburg and the United Provinces. The Dutch breed was especially established in the district of Holderness, on the north side of the estuary of the Humber, whence it extended northward through the plains of Yorkshire; and the cattle of Holderness still retain the distinct traces of their Dutch origin, and were long regarded as the finest dairy cows of England. Farther to the north, in the fertile district of the Tees, importations likewise took place of the cattle of the opposite countries, sometimes from Holland, and sometimes by the way of Hamburg, from Holstein, or other countries of the Elbe.

A few bulls, cows and heifers previous to the middle of the last century, were imported by Sir William St. Quinton, of Scannster, and Debinsons, which effected a considerable change; and it is to those individuals especially the country became indebted for "Improved Short-horns." The cattle formed by repeated crossings and selection, became gradually improved, and known at first as the Dutch or Holstein breed, under which names it extended northward through Northumberland, and at length became naturalized in the south of Scotland. It was also known as the Teeswater, or simply the Short-horned, breed. The spirit of emulation once being aroused, improvement succeeded improvement; and it may now confidently be asserted that this breed is without a parallel. In the pages of

Coate's Herd-Book, the pedigrees of all pure bred animals have for many years been recorded with the greatest care, in a similar manner to those of the race-horses in the British *Stud-book*. The Herd-Book contains the pedigrees of all animals of note since the time of the celebrated bull "Hubback," to which we shall presently refer, in 1777; it is published annually, beautifully illustrated, and forms a thick octavo volume. The value of this record of pedigrees is fully known to all breeders of Short-horns, and is, from the accuracy with which it is kept, an acknowledged authority on all matters in which the purity of blood of any animal is called in question. It appears that the Teeswater breed became much improved in the hands of several individuals, the recent experiments of the celebrated Bakewell with the Long-horns, excited a spirit of extensive emulation. Immense size of frame was at length attained, but the animals in general were comparatively coarse, and large consumers of food.

At length this valuable breed was destined to have its points harmonized and capabilities more fully developed by two brothers, Charles and Robert Colling, of Darlington, who succeeded in imparting to the Short-horn its modern characteristics. The Collings, we are informed, had become considerable farmers soon after the year 1770. Mr. Charles Colling, the younger brother, is justly regarded as the founder of the new breed, although his eldest brother followed him in his course of enterprise and improvement, step by step. Charles Colling cannot, indeed, be compared with Bakewell for boldness and originality of design; but he was greatly more fortunate in the selection of a basis for his breed. Colling, like Bakewell, seems to have regarded size in his animals, as a quality secondary and subordinate to those which he wished to communicate, and to have directed almost exclusive attention to beauty and utility of form, and development of the properties of early maturity and facility of fattening. Having, by selection and the skilful conjunction of the best individuals for breeding, become possessed of animals with the properties sought for, he continued to breed from his own stock, disregarding affinities of blood; by which means he gave to it the necessary permanence of character, and that delicacy of form which this system of breeding tends to communicate. He adopted the practice of hiring out his bulls, by which means he realised a complete fortune, and extended the influence of his stock to the districts around him.

Much obscurity hangs around the methods which Colling adopted for improving his herd, since he manifested great reluctance to communicate any definite information on these points. It is generally believed the first radical improvement which he effected on his stock, was through the medium of a young

bull, which he acquired by a kind of chance. This animal is said to have been a calf belonging to a poor man who grazed his cow on the sides of the highway. The calf was purchased from his owner by Mr. Waisted and Mr. Robert Colling, and shortly afterwards transferred to Charles, whose sagacity led him to perceive the value of the young animal. He seems, likewise, to have acquired the cow, which, however, on being removed to superior pastures, became so fat that she did not again breed. The calf inherited the same property, and as he grew up became so fat as to be useful as a bull only for a short time. This bull was termed Hubback. He was below the ordinary size of the Teeswater cattle, but his points and touch were admirable, and he is generally regarded as the father of the improved Shorthorns. However this may be, Colling, from this period, continued to produce many fine bulls, as Petrarch, Bolingbroke, Favourite, Comet, &c. The properties of his stock thus became more and more appreciated throughout the district of the Short-horns, and about the year 1800 had begun to extend to distant parts of the country where hitherto the Short-horn breed had not been cultivated. A circumstance, apparently trivial, contributed in a considerable degree to this result. A fine animal, termed the Durham Ox, the son of Favourite by a common cow, was sold for public exhibition, and carried in a caravan to all parts of the country. He was exhibited in this manner for nearly six years, and excited much interest among the country people. He arrived at great weight, but was chiefly remarkable for the fineness of many of his points. When killed, after two month's illness, during which he had lost considerably in flesh, he weighed 165 stones 12 lbs., besides tallow and offal.

Colling, from continually breeding from his own stock, seems to have pushed refinement in breeding to its limits; and probably began to experience that impairment in constitution in his animals which never fails to accompany a continued and forced intermixture of blood, in a limited number of individuals. Whether from this cause, or from a mere desire to try experiments, it is understood that he attempted various crosses with the cows of other breeds, and chiefly, it is said, with the Scotch Highland and the Galloway. The experiment with the former did not succeed, but that with the latter led to a remarkable result. Colling procured a fine Galloway cow, of a red colour, and this cow was covered by one of his best bulls; a grandson of Bolinbroke. The produce was a bull-calf, which in due time was conjoined with a fine Short-horn cow, Johanna. The produce of this union was likewise a bull calf, which, in the fitting time, was put to another fine Short-horned cow, Lady, from whom has descended a family termed, in reproach, the Alloy. The family of the Alloy,

however, has proved not inferior to those of what are termed pure blood. At the sale of Mr. Colling's stock, which took place in 1810, this cow, "Lady," with her descendants, sold at enormous prices, shewing that, in the estimation of the public, the Galloway cross had not impaired the excellence of the pure stock. Thus it appears, that by a single cross with another race, and then by breeding back again to the superior one, no injury was sustained; nay a fresh infusion of vigour was probably made into the parent stock. Similar results are common in the breeding of horses, dogs and other animals. The proceeding, in the case of Colling, was nothing more than a rash experiment, the favourable result of which should not diminish the caution of breeders, in preserving the purity of a family of animals whose characters have been established.

The whole of the unrivalled stock of Colling was sold in 1810, and fetched very high prices. The adjoining analysis will be read with interest at the present day. Seventeen cows of different ages realised the sum of 2669 guineas. Eleven bulls, from 1 year and upwards brought 2249 guineas; the celebrated "Comet," age 6 years was among the number and sold for 1000 guineas! Seven bull calves 655 guineas; seven heifers, 898 guineas; five heifer calves under one year old 806 guineas; thus making a grand total of 6777 guineas!

The other brother Robert Colling, was distinguished as a breeder, although his stock as a whole did not altogether reach the high reputation of Charles Colling's. It was sold in 1818, and reached the following prices;—Thirty-four cows fetched 4141 guineas; seventeen heifers, 1287 guineas; six bulls, 1343 guineas; four bull calves, 713 guineas; making a total of 7484 guineas!

The accompanying cut represents one of the finest bulls of Col. Townley's world renowned Herd of Short-horns at Burnley, Lancashire, England. "Master Butterfly" was bred and owned by the Colonel, and was considered by the best judges to have been an animal as nearly approaching perfection in the various points characteristic of this celebrated breed as England ever produced. After winning many of the highest premiums at the leading Shows of Britain, his enterprising owner disposed of him to a Society of farmers in Victoria, Australia, for the magnificent sum of *one thousand guineas*! It is to be regretted that this celebrated Bull died of inflammation after having served only one season. We saw his brother, "*Royal Butterfly*," at the Royal English Society's Show, at Canterbury, in 1860; an animal it is said not at all inferior to the former, and such possibly as we shall never see again. The following is *Master Butterfly's* Pedigree; No. 13311 English Herd Book:—



MASTER BUTTERFLY.—A SHORT HORN BULL.

MASTER BUTTERFLY.—Roan, calved July 14, 1853, bred by Col. Towneley, Towneley Park; got by Frederick (11489), dam (Butterfly) by Jeweller (10354) g. d. (Buttercup) by Expectation (1688),—by Belzoni (1709,—by Garrick (3863), gr. g. d. (Bampton Rose) by Comus (1861),—by Denton (198).

BREEDING IN THE LINE.

In a lucidly written treatise on "the Principles of Breeding," from the pen of S. L. Goodale, Secretary of the State of Maine Agricultural Board, are the following excellent observations which we commend to the special attention of our readers:—

The preferable style of breeding for the great majority of farmers to adopt is neither to cross, nor to breed from close affinities (except in rare instances and for some specific and clearly understood purpose), but to *breed in the line*, that is, select the race or breed best adapted to fulfill the requirements demanded, whether it be for the dairy, for labor or for beef in cattle, or for such combination of these as can be had without too great sacrifice of the principal requisite; whether for fine wool as a primary object and for meat as a secondary one, or for mutton as a primary and wool for a secondary object, and then procure a *pure bred* male of the kind determined on, and breed him to the females of the herd or of the flock; and if these be not such as are calculated to develop his qualities, endeavor by purchase or exchange to procure such as will. Let the progeny of these be bred to another *pure bred* male of the same breed, but as distantly related to the first as may be. Let this plan be steadily pursued, and although we cannot, without the intervention of well bred females, obtain stock purely of kind desired, yet in several generations, if proper care be given in the selection of males, that each one be such as to retain and improve upon the points gained by his predecessor, the stock for most practical purposes will be as good as if thorough bred. Were this plan generally adopted, and a system of letting or exchange of males established, the cost might be brought within the means of most persons, and the advantages which would accrue would be almost beyond belief.

The writer on cattle in the Library of Useful Knowledge well remarks:—"At the outset of his career, the farmer should have a clear and determined conception of the object that he wishes to accomplish. He should consider the nature of his farm; the quality, abundance or deficiency of his pasturage, the character of the soil, the seasons of the year when he will have plenty or deficiency of food, the locality of his farm, the market to which he has access and the produce which can be disposed of with greatest profit, and these things will at once point to him the breed he ought to be solicitous to obtain. The man of wealth and patriotism may have more extensive views, and nobly look to the general improvement of cattle; but the farmer, with his limited means and with the claims that press upon him, regards his cattle as a valuable portion of his own little property, and on which everything should appear to be in natural keeping, and be turned to the best advantage. The best beast for him is that which suits his farm best,

and with a view to this, he studies, or ought to study, the points and qualities of his own cattle, and those of others. The dairyman will regard the quantity of milk—the quality—its value for the production of butter and cheese—the time that the cow continues in milk—the character of the breed for quietness, or as being good nurses, the predisposition to garget or other diseases, or dropping after calving—the natural tendency to turn everything to nutriment—the ease with which she is fattened when given up as a milker, and the proportion of food requisite to keep her in full milk or to fatten her when dry. The grazier will consider the kind of beast which his land will bear—the kind of meat most in demand in his neighborhood—the early maturity—the quickness of fattening at any age—the quality of the meat—the parts on which the flesh and fat are principally laid—and more than all the hardihood and the adaptation to the climate and soil.

In order to obtain these valuable properties the good farmer will make himself perfectly master of the characters and qualities of his own stock. He will trace the connection of certain good qualities and certain bad ones, with an almost invariable peculiarity of shape and structure; and at length he will arrive at a clear conception, not so much of beauty of form (although that is a pleasing object to contemplate), as of that outline and proportion of parts with which *utility* is oftentimes combined. Then carefully viewing his stock he will consider where they approach to, and how far they wander from, this utility of form; and he will be anxious to preserve or increase the one and to supply the deficiency of the other. He will endeavor to select from his own stock those animals that excel in the most valuable points, and particularly those which possess the greatest number of these points, and he will unhesitatingly condemn every beast that manifests deficiency in any one important point. He will not, however, too long confine himself to his own stock, unless it be a very numerous one. The breeding from close affinities has many advantages to a certain extent. It was the source whence sprung the cattle and sheep of Bakewell and the superior cattle of Colling; and to it must also be traced the speedy degeneracy, the absolute disappearance of the New Leicester cattle, and, in the hands of many agriculturists, the impairment of constitution and decreased value of the Leicester sheep and the Short Horns. He will therefore seek some change in his stock every third year, and that change is most conveniently effected by introducing a new bull. This bull should be of the same breed, and pure, coming from a similar pasturage and climate, but possessing no relationship—or, at most, a very distant one—to the stock to which he is introduced. He should bring with him every good point which the breeder has laboured to produce in

in his stock, and if possible, some improvement, and especially in the points where the old stock may have been somewhat deficient, and most certainly he should have no manifest defect of form; and that most essential of all qualifications, a hardy constitution, should not be wanting.

There is one circumstance, however, which the breeder occasionally forgets, but which is of as much importance to the permanent value of his stock as any careful selection of animals can be—and that is, good keeping. It has been well said that 'all good stock must be both bred with attention and well fed. It is necessary that these two essentials in this species of improvement should always accompany each other; for without good resources of keeping, it would be vain to attempt supporting valuable stock.' This is true with regard to the original stock. It is yet more evident when animals are absurdly brought from a better to a poorer soil. The original stock will deteriorate if neglected and half-starved, and the improved breed will lose ground even more rapidly, and to a far greater extent."

A very brief resume of the preceding remarks may be expressed as follows:

The Law of Similarity teaches us to select animals for breeding which possess the desired forms and qualities in the greatest perfection and best combination.

Regard should be had not only to the more obvious characteristics, but also to such hereditary traits and tendencies as may be hidden from cursory observation and demand careful and thorough investigation.

From the hereditary nature of all characteristics, whether good or bad, we learn the importance of having all desirable qualities and properties *thoroughly inbred*; or, in other words so firmly fixed in each generation, that the next is warrantably certain to present nothing worse,—that no ill results follow from breeding back towards some inferior ancestor,—that all undesirable traits of points be so far as possible, *bred out*.

So important is this consideration, that in practice, it is decidedly preferable to employ a male of ordinary external appearance, provided his ancestry be all that is desired, rather than a grade or cross-bred animal, although the latter be greatly his superior in personal beauty.

A knowledge of the law of Divergence teaches us to avoid, for breeding purposes, such animals as exhibit variations unfavorable to the purpose in view; and to endeavor to perpetuate every real improvement gained; also to secure as far as practicable, the conditions necessary to induce or to perpetuate any improvement, such as general treatment, food, climate, habit, &c.

Where the parents do not possess the perfection desired, selections for coupling should be

made with critical references to correcting the faults or deficiencies of one by corresponding excellence in the other.

But to correct defects too much must not be attempted at once. Pairing those very unlike, oftener results in loss than in gain. Mating a horse for speed with a draft mare, will more likely beget progeny good for neither, than for both. Avoid all extremes, and endeavor by moderate degrees to obtain the object desired.

Crossing, between different breeds, for the purpose of obtaining animals for the shambles, may be advantageously practised to a considerable extent, but not for the production of breeding animals. As a general rule cross-bred females should be served by thorough-bred males.

In ordinary practice, breeding from near relationships is to be *scrupulously avoided*; for certain purposes, under certain conditions and circumstances, and in the hands of a skilful breeder, it may be practised with advantage, but not otherwise.

In a large majority of cases (other things being equal) we may expect in progeny the outward form and general structure of the sire, together with the internal qualities, constitution and nutritive system of the dam; each, however, modified by the other.

Particular should always be taken that the male by which the dam first becomes pregnant is the best which can be obtained; also, at the time of sexual congress both are in vigorous health.

Breeding animals should not be allowed to become fat, but always kept in thrifty condition; and such as are intended for the butcher should never be fat but once.

In deciding with 'what breeds to stock a farm, endeavor to select those best adapted to its surface, climate, and degree of fertility; also with reference to probable demand and proximity to markets.

No expense incurred in procuring choice animals for propagation, or any amount of skill in breeding, can supersede, or compensate for, a lack of liberal feeding and good treatment. The better the stock, the better care they deserve."

THE CHEMICO-AGRICULTURAL SOCIETY OF ULSTER AND ITS CLAIMS FOR SUPPORT.

Our readers will, we trust, excuse us if we address a few words to them regarding ourselves; and in doing so we must disclaim any charge of egotism, because when we advocate the claims of the Chémico-Agricultural Society, we are in reality urging the claims of an institution which is closely bound up with the personal interest of every landlord and of every tenant and farmer, not only in Ulster,

but throughout the kingdom. We might, indeed, go further, and say with perfect truth that there is not a consumer of agricultural produce in the country but is directly interested in the well-being of our association.—We believe, therefore, that we are entitled to the attention of the public; and such being the case we would be shirking an obvious duty were we to refrain from setting forth the strong claims which the society, of which this journal is the organ, has upon the public.

It is universally felt that the business of the farmer is one of vast importance. He is the food producer to the community. It is equally felt that ignorance is an extremely undesirable feature in a class which has such a responsibility as that of providing the first necessary of life, "our daily bread;" for ill-informed cultivators must always be insufficient providers, and thus the consequences of their lack of suitable information fall upon others as well as upon themselves. The great aim of all associations which have for their object the improvement of agricultural practice is to remedy this want of information; and they have effected it to a certain extent, although we must say that the circle in which they usually move might be enlarged with advantage both to themselves and to the public. But although we do not intend to discuss this view of what may be termed the shortcomings of such associations, there is one point in which they must necessarily be defective. They profess to teach and to encourage improved practices; but the requirements of modern agriculture demand that there shall be a union of "science with practice," in order that practice may become more effective, because more intelligent; and it is to effect this union that the Chemico-Agricultural Society has been formed, and that the three great national societies have enlisted the services of such men as Drs. Apjohn, Voelcker and Anderson.

The time has gone by when the idea of the co-operation of science with practice, in the business of farming, could be received with a sneer. Men have got wiser, and a strong tribute is paid, no doubt often unconsciously, to the advantages which scientific research confers on the practice of agriculture, whenever even an analysis of a manure is asked for, as a test of the value of the article. It may happen that the analysis is worthless; that it is even worse, and positively injurious, because it is a fabricated document; but this does not render the homage paid to science one whit the less, nor does the falsity of that document invalidate the claims which science has upon the merely practical man. If the union of "science with practice" rested on no higher grounds than those which were founded on the detective, and therefore protective functions of the former, there would be quite

enough to justify the connection. But its claims are even higher, and the field of its operations is, in reality, almost boundless.

It is now 16 years since the Chemico-Agricultural Society was established, and although its means have always been extremely limited, in a pecuniary point of view, we have no hesitation in saying that it has done a vast amount of good during its existence. If it had been more liberally supported, much more could have been done, and we therefore call upon the public to give it heartier support, so that it may be enabled to take a higher position in the promotion of the general welfare of the community than it has as yet been able to attain. The people of the northern provinces have long been favourably known for their intelligence and industry; but it is possible to heighten that intelligence and to stimulate that industry. A most efficient agent in effecting this exists in the Chemico-Agricultural Society. It has not, indeed, the attraction of annual exhibitions to draw public attention to its doings; but operations tell on the success of those very exhibitions. It does not, indeed, profess to improve the agricultural standing of the country by introducing better breeds of stock, but it assists in rendering such improved stock more profitable by the influence which it exercises on the cultivation of the soil, the feeding of stock, and the various ramifications of farm practice. We trust, therefore, that our appeal will not be unheard, but that many who have not as yet contributed to the funds of the society, and who have not as yet lent it the influence of their names, will see fit to do so. There are thousands in Ulster who have not contributed a shilling to the funds of the society but who have, directly or indirectly, been benefitted by it, and we certainly think it is their duty and their interest to support it.

[We take the foregoing from the last number of the *Journal of the Chemico-Agricultural Society of Ulster*, and shall be happy to learn that the appeal has been liberally responded to. That Society, with small means, has effected much good, not only for the agriculture of Ulster, but the whole of Ireland. We have frequently availed ourselves of the valuable investigations and results of its accomplished Chemist, Professor Hodges, of Queen's College, Belfast, whose labours and writings are well known and appreciated on this side of the Atlantic as well as in Europe. We trust, therefore, that the Society has yet before it a long career of increasing usefulness.

—EDS C. A.]

Agricultural Intelligence.

THE STEAM PLOUGH TRIALS AT YORK.

The following Official Report to the Council of the Yorkshire Agricultural Society, on the recent trial of Steam Ploughs and Cultivators, will not be without interest to our readers generally. Mr. Morton, who conducted the trials, is a man peculiarly fitted for such a work, having devoted for many years special attention to farm machinery :

The field set apart for the exhibition of steam ploughs and cultivators, though perfectly well fitted for showing the machines at work, being large enough for three or four hours' trial of all the different implements upon the ground, and providing a furrow upwards of 300 yards in length, is yet very ill adapted for the illustration of steam cultivation. It is for the most part of an extremely light soil, and thus presents none of that difficulty as to either the labor or the quality of horse cultivation which proves on stiffer land the advantage of applying steam power to the cultivator or the plough. And besides that, there extends across the field a narrow band of stiff clay, which requires a double or triple power to cross it, so that the engines employed had to be worked throughout the furrow at much higher pressure than was needed, except at particular moments. A spectator had thus no sufficient opportunity given to him of ascertaining aright either the advantage or the cheapness of the cultivation of the land by steam. He had, however, ample opportunity of seeing how the machines of Fowler and Howard were worked; and his own experience in cultivation elsewhere might enable him to judge of the advantage they possess on the stiff soils of the country.

It is indeed impossible to over-estimate the advantage of steam cultivation on stiff clay lands. They are dependent on proper cultivation even more than on the application of manures for their fertility, for they are already full of the food which plants require if we only could get it. To this end, they need to be broken up and exposed throughout their depth to the free access of air and weather. But there are comparatively few days during the year in our climate when this can be done by horse-power, for they are generally either baked by the sun, so that horses cannot pull the plough or cultivator through them, or they are so softened by the rain that the trampling and the sliding of the team and tool will do more to close the land than open it. We want a power which shall make the full use of the short intervals when such land is in proper condition for tillage operations, and which shall at the same time avoid the evil of poaching the land above and harden-

ing it below, which in the horse cultivation of clays is too often seen. A four-horse team and plough weigh more than 40 cwt., and all this goes trampling and sliding from end to end of the field that is being ploughed, over every 10 or 12 inches of its width; and thus of course a floor is formed beneath the soil, hindering drainage, which is the greatest improvement of which clay lands are capable. We want a tool not weighing more than 4 or 5 cwt. for every foot in width worked by it—carried on wheels so as not to close the surface over which it travels, and driven by a power which shall not press upon the land that is being worked.

All this we have in the steam-drawn ploughs and cultivators that were seen at work yesterday. The ploughs employed weigh not more than 5 to 7 cwt. per foot of width, and both are carried on large wheels at wide intervals, thus traversing the field but once to every 4 or 6 feet width. The engines driving them either travel on the headland, as in Fowler's apparatus, or they may stand altogether out of the field, as in Howard's case. In both cases the tools can be drawn with wonderful effect through sun-baked clay which horses could not touch; and (supposing the land to be fit for horse work) in both cases the mischief done by drawing a heavy tool across the land that wants loosening and cultivating is reduced to a minimum; while for speed of work in order to the full use of the short times when clays are fit for cultivation, the advantages of steam power are in both cases beyond a question.

We saw the speed of steam cultivation well illustrated yesterday, and the superior quality of steam cultivation was also sufficiently well shown, for the patches of clay land in the field were ploughed and cultivated, and the lighter soil was thrown about, so as no horse-power could have done it.

The cost of the work cannot be illustrated by a few hours' trial; but there is now experience, both of Fowler's and Howard's apparatus, over years enough and acreage enough to prove that their better cultivation is generally attained at much less cost than is incurred in horse labor. I have walked over many thousands of acres cultivated by both, and having been allowed to inquire particularly into the history of steam cultivation over many score of farms in all parts of the country, I am able to speak with some confidence on this point. It will be found that taking every particular of the expense into the account—wages, fuel, breakages, and tear and wear, and interest of capital—good ploughing may be done by steam for from 8s. to 10s. per acre, and one-way grubbing for from 5s. to 8s. per acre, which under horse labor would have cost 12s. to 18s., and 6s. to 10s. respectively for much inferior work.

There is, I believe, no one, unless he be interested in the success of one or other of the rival firms engaged in the manufacture of steam ploughs and cultivators, who will not greatly prefer thus confidently to report the unquestionable

success of steam cultivation generally, rather than venture to compare the rival methods of it after a few hours' trial and inspection. Having, however, undertaken the duty of drawing up such a comparison, I have now to relate the performances of the machinery that was exhibited at work.

On one side of the field an ordinary Clayton and Shuttleworth's single cylinder 8-horse-power moveable threshing engine drove by strap a moveable anchor furnished with clip drum, by which the draught rope extending from it around another moveable anchor on the farther headland was drawn to and fro, and with it Fowler's ordinary 4-furrow balance plough. The engine has a single 9-inch cylinder, with 12-inch stroke, and it was working at a pressure probably upwards of 70 lbs., the gauge standing occasionally as high as 80 lbs.; though I was assured it was indicating beyond the truth,—being out of order.* The engine was making about 130 revolutions per minute during the trial. The ploughing, as I measured it, was hardly 5 inches deep. The furrow was 330 yards long. The plough made close on 13 journeys along this furrow within the hour, losing $6\frac{1}{2}$ minutes on the headlands, and $1\frac{1}{2}$ minute during one stoppage. Exactly 1 acre (not half a perch more) was accomplished within the hour. The men employed were: engineman, two anchormen, one ploughman, and two porter lads. The rope was well carried on 12 rope porters, which stood rather less than 50 yards apart.

The central plot allotted to Messrs. Howard, was partly ploughed and partly cultivated. In their new three-furrow balance plough, the two frames carrying the ploughs balance one another, not, as in Fowler's machine, by being both part of one rigid frame-work, thus balancing over the axle of the wheels which carries it, but by each hinging on separately to a central framework, which runs on three wheels; and each as in its turn it drops into its work, lifts the other off the ground, the chain which connects the two passing over cams or eccentrics, thus giving to each, as its turn comes to work, an advantage in weight over the other.

The plough is drawn to and fro by a Clayton and Shuttleworth's ordinary 10 horse-power engine, with 7-inch double cylinders and 12-inch stroke. It was working up to 70 lbs. pressure, and making from 125 to 130 revolutions per minute. It drives a double windlass, each barrel being geared into work alternately, while the other, which is then paying out the slack-rope, drags upon a wooden stud, on which it drops when out of gear. The patent snatchblock arrangement, by which the drum is hindered from paying out rope any faster than its neighbor pulls it in, was also in operation, the advantage of it

being that the slack rope behind the plough is kept at sufficient tightness to prevent its dragging on the ground. This rope runs all round the part of the plot which remains unworked, and was carried on eight high rope porters on wheels and nine lower ones, and on eight wheeled lower porters along the furrow on which the implement is at work. These latter porters are furnished with an ingenious leverage, enabling the porter lads very easily to shift them and replace them. The men employed here were: engineman and windlass man, two anchor men to shift the pulleys at either end of the furrow as it encroached on the unworked part of the land, one ploughman and two rope porters. The work accomplished with the plough was as nearly as possible (not half a perch less) three roods within the hour; and I estimated it at fully 5 inches deep. The ground was here, upon the whole, more difficult than where Fowler's plough was working; the clay patch being wider here than there. The work was accomplished in 14 journeys of the 3-furrow plough, along a furrow 314 yards long; seven minutes were lost on the headlands, and one minute was lost during a stoppage.

Howard's three-tined cultivator, furnished with teeth projecting both ways, so as to come into operation on both the forward and backward journey without turning at the land's end, was also tried here. At first it was set too deep for the power of the engine when on the clay; and as it is not provided with any means by which the man can at once release it in any degree from its work, when once it stops, there it must remain until the engine acquires power to pull it through. Thus, during the first half hour it made only four journeys, cultivating very deeply and thoroughly rather less than a quarter of an acre in that time. During the next half hour of its trial, when it was working at a less depth, it made seven journeys, accomplishing close on half an acre in the time, or at the rate of one acre per hour.

The outer plot was set apart for Fowler's 14-horse power engine with double cylinder of $7\frac{1}{2}$ inches, with 12-inch stroke, working at about 75 lbs. per inch, and making 150, often 180 revolutions per minute. The speed of its work was indeed such, that when on the lighter parts of the field the furrow slices were thrown from the mould-boards or digging breasts fully 30 inches on one side, making quite a wave of earth, which was tossed off them in a thoroughly smashed condition—tossed however into heaps which would require rather a laborious levelling during the next tillage operation. There are here 1 engineman, 1 ploughman, 1 anchorman, and 2 porter lads employed. The four-furrow balance plough, with the digging breasts, made about $9\frac{1}{2}$ journeys along a furrow 318 yards long—losing only $2\frac{1}{2}$ minutes on the headlands—during half an hour, ploughing nearly 6 inches deep at the rate of 1 acre 1 rood $5\frac{1}{2}$ perches per hour.

The 7-inch grubber was then tried, only six

* It is proper to remark that the disc indicator of steam pressure attached to this engine was out of order—the index pointing to 62 lbs. all day long! so that many spectators must have gone away with the impression that all the work done here was accomplished by about two-thirds of the force that was actually employed.

times however being in operation : thus accomplishing a width of more than $5\frac{1}{2}$ feet at a mite. It made $8\frac{1}{2}$ journeys in the half hour, doing very thorough work at the rate of about 1 acre, 3 roods 24 perches per hour. The advantage of great rate of speed was shown in the complete wreck and smash of the earth that was moved. It was, however, here also, though in a less degree, occasionally left too irregularly for easy treatment afterwards with the harrows; and a less speed would, on this account, have been better. Howard's cultivator, driven not nearly so fast, was found, on examination, to have moved as much earth per superficial yard; but it was merely moved, not tossed about, and it would need, therefore, a crossing with the cultivator before the ordinary harrows would take hold of it. Whereas Fowler's work would no doubt have been laid hold of by the harrow at once; though, as already said, sometimes too much laid in heaps.

In order still further to compare the work done by the several cultivators and ploughs upon the ground, it was resolved to attempt an estimate of the earth moved per acre in the several cases. To this end a frame, 4 feet by 4 feet 6 inches—enclosing, therefore, 2 square yards of surface—was provided; and all the earth within this frame, which was dropped here and there on the several plots, was carefully collected and weighed. The following tables represent the work accomplished by the several machines as thus ascertained :

1. Fowler's (so called) 8-horse power engine with moveable anchor, carrying clip drum and a four furrow balance plough.

Labourers Employed—Four men and two lads.

Estimated Depth of Work—Barely 5 inches.

Quantity Ploughed per Hour—One acre.

Weight of Earth moved per square yard ascertained in four instances—

No.	Stones.	lbs.
1	35	3
2	29	0
3	31	2
4	28	10

Average weight of earth moved

per yard 31 0

Weight of earth moved per acre... 938 tons.

Weight of earth moved per hour by the so-called 8-horse power engine—4 men and 2 lads.... 938 tons.

2. Howard's (so called) 10-horse power engine with windlass, and 3-furrow balance plough.

Labourers Employed—Five men and two lads.

Estimated Depth of Work—Fully 5 inches.

Quantity Ploughed per Hour—Three roods.

Weight of Earth moved per square yard, ascertained in four instances—

No.	Stones.	lbs.
1	26	10
2	30	10
3	35	3
4	30	7

Average weight of earth moved

per yard 30 11

Weight of earth moved per acre 932 tons.

Weight of earth moved per hour

by the so-called 10-horse

power engine—5 men and

2 boys 774 ton

3. Fowler's (so-called) 14-horse power engine with 4-furrow balance plough, and digging breast—

Labourers Employed—3 men and 2 lads.

Estimated Depth of Work—Close on 6 inches.

Quantity Ploughed per Hour—One acre 1 rood $5\frac{1}{2}$ perches.

Weight of Earth moved per square yard, ascertained in three instances—

No.	Stones.	lbs.
1	31	3
2	34	0
3	35	3

Average weight of earth moved

per yard 34 2

Weight of earth moved per acre 1002 tons.

Weight of earth moved per hour

by the so-called 14-horse

power engine—3 men and 2

lads 1280 tons.

4. Howard's 10-horse power engine, double windlass, and 3-tined cultivator.

Labourers Employed—5 men and 2 boys.

Weight of Earth moved per yard, ascertained first when going deeply and doing $\frac{1}{2}$ an acre per hour, 33 stones, equal to 998 tons per acre, or about 500 tons per hour. In this case, however, as already stated, the stoppages were frequent, the power being insufficient.

In the second case the weight of earth moved when the cultivator was going shallower and doing 1 acre per hour, was ascertained in three instances—

No.	Stones.	lbs.
1	24	4
2	19	7
3	22	0

Average weight of earth moved

per yard 21 12

Weight of earth moved per acre 660 tons.

Weight of earth moved per hour

by the so-called 10-horse

power engine and 5 men

and 2 lads 660 tons.

5. Fowler's so-called 14-horse power engine, with 6-tined cultivator.

Labourers Employed—3 men and 2 lads.

Weight of earth moved per square yard ascertained in five instances—

No.	Stones.	lbs.
1	22	7
2	22	7
3	20	0
4	24	0
5	20	0

Average weight of earth moved

per square yard... .. 21 10

Weight of earth moved per acre .. 650 tons.

Weight of earth moved per hour

by the so-called 14-horse

power engine, 3 men and 2

lads 1240 tons.

The weight was here taken in so many instances because it was supposed that some mistake had been committed, the quantity of earth moved per acre by Fowler's cultivator certainly appearing to be very much greater than that moved by Howard, whereas, repeated weighings proved it to be actually somewhat less. The fact was that it was thrown about so much more roughly in the former case that it lay looser and appeared deeper than it was. And one result of these weighings is to prove the fallacy of estimates of work of this kind by mere measurement, however honestly performed. The quantity of earth moved per hour (per day) is of course very much greater in Fowler's case than in Howard's. The power employed was much greater—how much greater is probably inadequately represented by the nominal horse-power of the several engines. The reader has, however, before him, in the speed of the engines and the size of the cylinders and the pressure of the steam, the means of comparing pretty accurately the power employed; and, contrasting this with the work accomplished in the several instances, he will draw his own conclusions of the merit of the several machines at work.

It is proper to add, that the results of a racing trial do not necessarily represent the ordinary experience of the farmer, and that the above is to be taken as absolutely true only of the case here described, where ploughs and cultivators were employed on a clover stubble in a light sandy field for an hour or two last Tuesday. It is also fair to add that the clayey part of the field extended more and more towards the latter side of the field here described, so that Fowler's 8-horse power engine worked on lighter land, upon the whole, than Howard's 10-horse power, and this latter on rather lighter land than Fowler's 14-horse power engine.

We add the prices of the apparatus employed:

1. Fowler's 3-furrow plough, 800 yards rope, 5-tined grubber, and rope porters, two anchors	£	s.	d.
8-horse power engine	295	0	0
2. Fowler's 14-horse power engine, 4-furrow plough, rope porters, 800 yards rope, and anchors	875	0	0
7-tined cultivator	70	0	0
3. Howard's double windlass, 1,400 yards of rope and cultivator	220	0	0
3-furrow plough	50	0	0
10-horse engine	295	0	0

JOHN C. MORTON.

August, 1862.

ERADICATION OF OX-EYE DASIES.—Do you or any of your subscribers know how to eradicate Ox-eye Daisy? Part of my farm is becoming infested with them, and I want to get them out. *Ans.* They may be kept in check by sheep, they eating them so close that they will not seed. Sometimes they are kept from spreading by mowing them off with the scythe, while in flower, but they cannot be eradicated except by smothering with rotten wood or

straw, or by effective cultivation. J. J. Thomson as states in the *Country Gentleman*, that on a farm which he had lately visited in Pennsylvania, the Ox-eye daisy has been so thoroughly eradicated that not a plant could be seen through it is generally abundant in the neighborhood. The mode practiced for its extirpation is to plant two hoed crops in succession, usually Indian corn, both being well manured, to be followed by wheat and "seeded" to clover. The few weeds which show themselves are dug up.

Horticulture.

HORTICULTURAL NOTES,

Made during a Tour in the British Islands and France, during the Summer of 1862.

It may be of some interest to a portion of your readers who have a taste for Horticulture, and the cultivation of flowers, to give a short description of some of the more rare and beautiful trees, shrubs, and plants, which I saw growing during my late visit to the Botanical Gardens of Ireland, England, Scotland, and Paris, during the past summer.

Having, in a former letter, given a brief description of the Botanical Gardens of Belfast, I shall pass over them, and commence with the Royal Botanical Gardens of Dublin. The gardens are beautifully situated on a rising piece of ground close to the Glasnevin Cemetery, within the immediate vicinity of the city. They comprise about 30 acres, tastefully and systematically laid out, and kept in the very best order; and are planted with every variety of trees, shrubs, and plants that will stand the climate of Ireland. The range of hot and green houses is extensive, all being built of iron and glass, and filled with a vast collection of rare and valuable plants. It may be interesting to describe a walk through these houses, and notice some of the rarer plants as we proceed:—The first house is the octagon, containing a large collection of the lone bearing or Pine Tribe Plants. I noticed fine specimens of the Norfolk Island Pine, Moreton Bay Pine, Brazilian Pine, and Chinese Pine. The next house we enter is called the *Victoria Regia House*,—where that magnificent water lily is grown, forming a magnificent object. In the same tank you see the *Nelumbium Speciosum*, the sacred bean of India. There are also other varieties of water lilies, natives of the Tropics; and rice ripening its grain. Leaving this we enter the *New Holland House*, filled with plants, natives of Australia and the Cape of Good Hope; fine specimens of the genera *Banksia*, *araucaria*, *Bidwilli*, all the *New Holland acacias*, and many others that I took no note of. Proceeding on we enter the *Heath House*, containing

an immense number of varieties of this beautiful class of plants, principally natives of the Cape of Good Hope; some of the specimens were really fine, I should think, at least, six feet in circumference, and covered with bloom. Going on we enter the *Palm House*, the central house of the range, 40 feet high. When I was there they were erecting a new palm house which, from appearance, would be nearly 100 feet high. The palm house contains noble plants of the *Great Fan Palm* of South America; the *Date Palm*, supposed to be the palm tree of Scripture, and the plant which produces the dates of commerce. There is also growing in this house the well-known *Cocoa Nut* tree, and the *Plantain* tree, bearing large bunches of ripe fruit, weighing from 20 to 30 lbs. Leaving this department we enter the *Cactus House*, containing a very large collection of this tribe of plants, many of them very large. I also noticed fine specimens of *Euphorbias*, large American *Aloes*, *Staphelia* or Carrion Flower, and *Strelitzias*. Walking along we come to a large stove filled with miscellaneous selections of plants which require a pretty high temperature to grow them well. The *Sugar Cane* thrives well, also the *Coffee tree*, *Cinnamon tree*, and the *Banyan tree*, sending out roots from the branches inclining towards the earth, into which they fix themselves, becoming in a short time strong supports; I also noticed a very remarkable tree in this house, the *Lace Bark tree* of Jamaica, whose inner bark, without any artificial preparation, resembles beautifully wrought lace. Another curious plant grows here, the *Skeleton Plant*, the skin of the leaf appears to be removed, and nothing left but a web of veins resembling coarse lace. Proceeding on we enter the Orchidaceous and Fern House—a fine sight to see such a collection of these rare and curious plants. I shall just notice a few that attracted my attention as I passed along,—the West Indian Butterfly Plant, (*oncidium Papileo*) looks like a large locust with wings expanding; the Dove Plant, (*Peristeria Elata*) resembling the form of a dove in miniature; another remarkable plant, the Moth Plant, (*Phalarnopsis amabilis* and *Grandiflora*.) We have also here the South Sea Island *Bread-fruit tree*, bearing its fruit abundantly. I observed the *Sarracinia Purpuria*, our Canadian Pitcher Plant, which is cultivated with great care. The Moving Plant is also a great curiosity, the leaves are constantly in motion, raising up and falling down alternately. Passing on we enter the large Central Conservatory, which contains a miscellaneous selection of Cape of Good Hope Plants; some remarkable *Tree Ferns*, probably from 8 to 10 feet high, natives of Australia. Celery leaved and Fern leaved Pines, very strange looking plants. The next house we enter contains a mixed collection of hardy green house plants.

We now come to the last house of the range,

called the *Camellia* and *Azalia* house, which contains a fine and extensive selection of *Camellias* and *Azalias*. The white and scarlet tree *Rhododendrons* of Nepaul. Leaving this house, we walk out into the Flower Garden, which is very tastefully laid out and kept in the very best order.

The *Rookery* and aquarium form part of the ornamental grounds. The Botanical department of the Garden seems to be well managed, and the *Arboretum* contains a large and interesting selection of shrubs and trees. There is connected with the garden a Botanical Museum for the reception of all useful and interesting vegetable products in their raw state.

These Gardens are liberally supported by Government, and are a great ornament and attraction to Dublin, which is truly a magnificent city; the environs, comprising the extensive Phoenix Park, and the Vice Regal Residence, are particularly picturesque. The Glassnevin Garden, in point of arrangement and management, reflects great credit on the able and scientific curator, Mr. Moore, who has done much to advance the art of horticulture in Ireland. There is also a Botanical Garden attached to the extensive grounds of Trinity College, which is specially arranged for the practical teaching of Botany, and is much frequented by medical students.

Leaving Ireland, I would now take a glance at some of the rare plants in the Royal Botanical Gardens of Kew, the vicinity of London. The beauty and extent of these grounds and of the plants and trees which they contain attracts, as may be supposed, great crowds of visitors. I derived much pleasure and instruction from my visits to Kew.

I shall have to be very brief in any remarks I make, and I would just say that my memory is not sufficiently retentive to remember all the fine plants I saw in these noble Gardens, but having before me the published *Guide* to the Gardens, I am enabled to recall to mind many of the noble specimens that attracted my attention. The first house we enter is the Conservatory, filled with Australian trees and shrubs. Here you will see the *curious* Hand Plant, (*Cheirostmon Platanoides*) with leaves resembling those of the Plane tree, and stamens resembling a man's hand.

The next house we enter is called the *Orangery*. I did not observe any orange trees; the house is used for protecting in the winter large and half-hardy trees and shrubs, especially tender pines; the most of them were out on the lawn when I was there. Proceeding on we enter the Tropical aquarium; the large circular tank contains a fine specimen of the *Victoria Regia*, and other water plants. We now enter the Great Palm house, occupying an area of 362 feet long, the centre is 100 feet wide, and 66 feet in height; the whole is built of iron, stone, brick, and sheet glass. The extent of glass for covering this vast building is

about 45,000 square feet. The whole is heated with hot water pipes, 24,000 feet in length; and water tanks 100 feet. The Palms growing here are the noblest specimens I have seen; having mentioned a good many varieties that were growing in the Dublin Palm House, I shall omit them here. The Bamboo grows to a great height, pushing its way through the glass roof. A very large plant of *Cycas Revoluta*, which yields a kind of sago in the East Indies. I noticed also the Papaw tree, the Chocolate tree, Mango tree, Mahogany tree, and Coffee tree, with a host of other rare trees that space would not permit me to mention. We proceed on and enter the *Orchid* house, containing a vast amount of orchideous plants, many of them of great value, and when in flower they are certainly amongst the most beautiful objects of the vegetable creation. Entering the next house, there is a fine tank of water, containing several varieties of aquatic Floating Plants. The stage also contains very choice plants suited to the atmosphere of this house; several being very singular and striking in their appearance.

The next department is the succulent house, 200 feet long, 30 feet wide, filled with a rare collection of *Cactuses*, *Aloes*, *Euphorbias*, *Grassulas*, *Staphelias*, &c. The collection of these curious plants is perhaps the largest in Europe. Here you will see the true African *Aloe*, which yields the medicinal aloes of the shops. Of the same natural family is the New Zealand Flax, (*Phormium Tenax*;) its leaves are like those of our Iris or Flag, and abounds in a strong fibre, which recommends it for an immense variety of uses in Europe. Another extensive group of plants we see here is *Agava Americana*, (Great American *Aloe*) which is said to blossom only once in a hundred years. I was fortunate in seeing one of these plants in bloom in the Conservatory at Kensington Gardens; the flower stem was about 20 feet high, with white bell-looking flowers, very much resembling Adam's needle, (*Yucca Gloriosa*.)

We will now take a look at the Hardy Aquarium, a large tank filled with bog earth and water, containing hardy aquatic plants of England and other cool countries. This house is used for the purpose of testing the hardiness of all of kinds of aquatic grasses suited to the climates of England and Scotland. You have no doubt heard of the celebrated *Tussac Grass* of the Falkland Islands, which flourishes here luxuriantly; it is a valuable coarse agricultural grass, and has been introduced with considerable success in the Orkneys and Hebrides; probably it might be worth a trial to introduce it in some of the low half-swampy parts of Canada. We now enter the New Holland house, filled with all the rarer sorts of Australian *Aceacias* and other plants. We come now to the Tropical Fern house, 140 feet long and 28 feet wide. The Ferns constitute a valu-

able and beautiful collection, and nothing can exceed the variety, beauty and elegance of the leaves and fronds. We now pass through the Arum house, the Azalea house, Camellia and Rhododendron; all filled with valuable collections of plants in their respective classes.

We now walk out into the pleasure grounds and *Arboretum*, comprising an area of 270 acres, open to the public, without any charge, every day, from May to the end of October, from 1, P. M., to sunset, and on Sundays from 2 to 7, P. M. When I was there thousands of respectably attired people were walking in these noble grounds, and it is very rare that any injury is done to the flowers or trees; the good sense and right feeling of the public is duly appreciated, in their being permitted to enjoy themselves in these grounds. Before closing my brief remarks on Kew, I may observe that it would be well if the youth of Canada were taught to respect and protect shrubs and flowers in public and private gardens, streets, &c., and not cut and injure them as is generally done. In this respect the people of the old world are much better conducted than on this side of the Atlantic. It is a rare thing indeed for any injury to happen to trees, fruit, flowers, &c., by admitting the public to parks and gardens.

After leaving Kew let us take a short glance at Hampton Court Palace, a distance of about 12 miles from Hyde Park Corner, beautifully situated on the Northern banks of the Thames. The Gardens are very extensive; the walks in the pleasure grounds and round the Palace are about three miles in extent. The beds are all planted with the choicest varieties of bedding-out plants in the grouping and ribanding styles. Some very fine old orange trees, large and in full bearing, the remains of Queen Mary's collection. The greatest curiosity is the large vine, certainly the largest in Europe. This vine is supposed to have been planted in the time of Cardinal Wolsay, 1526; the house where the vine grows is seventy-two feet long, and the breadth on the rafters thirty feet; the vine is above 100 feet long, at three feet from the ground the stem is nearly thirty inches in circumference; it is a black Hamburg grape, and the quantity it bears in some seasons exceeds 2,000 bunches. When I was there the grapes were quite green, but promised a fair crop; the bunches were small. The house is not heated by any artificial means, and it is therefore strictly a cold vinery. For one penny you can have a full view of this noble vine. Another great attraction here is the Maze, or Labyrinth, which was formed in the early part of King William's reign. It is a source of much amusement in trying to discover the intricacies of the Labyrinth, and is much resorted to, particularly by the young people.

Leaving the Palace and taking our seat on the coach for London we enter Bush by Park, and

pass through the fine avenue of horse chesnut and lime trees, more than one mile long; these trees are of great size and age, and have a noble appearance.

The next trip I made was to Sydenham Palace. I cannot describe the pleasure I derived from this visit. The grounds and the palace occupy 200 acres, which are laid out with the most perfect taste. The Rosery, or Mount of Roses, was in full bloom. This is a circular colonnade, formed by 120 columns supporting 12 arches, 32 feet in height, and 16 feet wide. Roses of every variety grow up here on the lattice work, and produce a very fine effect. The slopes of the bank round this mound are planted with all the approved varieties of standard and dwarf perpetual roses. The valley of *Rhododendrons*, principally of the American varieties, was very fine. Broad walks, fine lawns, great fountains, water temples, with their cascades and falls, extinct animals, and many other attractions, the magnificence of which must be seen to be appreciated.

Before closing my remarks on Sydenham I would take the liberty of throwing out a few suggestions for the arrangement of bedding-out plants on the grouping and ribanding system adopted at Sydenham, Kew, and other places, I was very much pleased with this form of planting, and would strongly recommend a trial of it in Canada. Plants adapted for this purpose are such as we grow in our houses for planting out. I will give a few specimens of what I think would have a fine effect. The beds may be made of any shape to suit individual tastes, as for example, stars, crosses, diamonds, squares, circles, &c.

Grouping in Beds.

A circle of White Petunia, edged with Verbena, Giant de Battles.

A centre of Purple Verbena, edged with Geranium, Golden Chain.

A centre of Geranium Nosegay, edged with Gazania Splendens.

A centre of Punch Geranium, edged with Cloth of Gold Geranium and a Ring of Lobelia Speciosa Kermesina.

A centre of Scarlet Geranium, edged with White Verbena.

A centre of Geranium Ceres Unique, edged with a rim of Crimson Geraniums, and a ring of Cerastrum Lomentasum, a fine dwarf variegated white plant, easy of cultivation, and will stand clipping.

A centre of Geranium Punch, two rings of Golden Chain Geranium, and one ring of Lobelia Speciosa Kermesina.

A centre of ivy-leaved Geranium, edged with Cuphea Platycentra.

A centre of Ageratum Mexicanum, a ring of Punch Geranium.

A centre of Dwarf Bedding Dahlias, two rings of variegated Geraniums.

A centre of Portulaca Splendens, two rings of variegated Alyssum.

A centre of Calceolaria Aurea, two rings of crimson nosegay Geraniums.

A centre of Pirilla Nankinensis, two rings of Scarlet Geraniums, edged with Mentha Variegata (Variegated Mint.)

A centre of Tropaeolum, Crystal Palace Gems, edged with two rings of Purple Verbena.

The same arrangement of plants may be adopted for ribanding, using those recommended for centres of beds as back grounds for the ribands. For mixed beds, variegated and scarlet Geraniums have a fine effect; also, Heliotrope and scarlet Geraniums look well.

I do not wish it to be inferred that the variety of plants mentioned are the only effective arrangement for beds. I simply recommend them as suitable, and easy to be obtained; of course as we advance in this new style of garden decorations we shall increase our variety of plants suitable for the work.

JAMES FLEMING.

Toronto, December, 1862.

To be Continued.

TORONTO GARDENERS' IMPROVEMENT SOCIETY.

[It is with much satisfaction that we record the formation of a Society among the Gardeners of this city and neighbourhood, for self-improvement, and the advancement of their useful and refining art. Hamilton, as our readers well know, has for several years had such an organization. We wish the new enterprise every success, and should like to hear of similar societies being established in different parts of the Province. In order to meet a practical want that may be felt by such as may contemplate the formation of a Gardeners' Society, we insert for their information the regulations that have been adopted by the one just established in Toronto.—Eds.]

At a Meeting of the principal practical Gardener's of Toronto, and the neighbourhood, it was agreed that they should form a Society for the promotion of useful information among themselves in matters connected with gardening. The object of the Society being to bring the Gardeners together from time to time, that they may mutually benefit each other by entering into discussion on various Horticultural subjects, each one thereby making known his views and experience. A preliminary meeting was accordingly held the second Monday in December, at which a Committee was appointed to draw up a set of Rules and Regulations, and to report the same to a general meeting held on the 22d of December. The report of the Committee being approved of—the

following Members were elected Officers of the Society for the ensuing year:

James Fleming, Chairman.
James Forsyth, Secretary & Treasurer.

DIRECTORS.—C. J. Young, E. Turner, S. Ashby, Jas. Maughan, Geo. Vear, E. Townsend.

Through the kindness of the Board of Agriculture, the Society is granted the use of one of the rooms in the new Agricultural Hall, corner of Yonge & Queen Streets. The first general meeting for discussion will be held on the third Monday in January 1863, at 7 o'clock P. M. Subject:—"The cultivation of the Azalia, and the best mode of forcing the Strawberry."

REGULATIONS.

1. Persons desirous of admission to the Society shall be recommended by two Members; the votes of two thirds of the members present being necessary for the admission of a member.

2. Members of the Society shall pay an annual subscription of one dollar for defraying necessary expenses, any surplus or donations will be applied to the purchase of Horticultural publications.

3. The Office bearers to consist of a Chairman, six Directors, Secretary and Treasurer, to be elected annually at the annual general meeting of the Society on the third Monday in January. Five of the Office bearers to be a quorum for the transaction of business.

4. The duty of the Chairman shall be to preside at all Meetings, to regulate the order of procedure by enforcing the rules for the regulation of debates or discussions. In the absence of the Chairman, one of the Directors present shall preside for that occasion.

5. The duty of the Secretary shall be to record the proceedings, giving a short account of the proceedings and discussions.

6. The duty of the Treasurer to collect and pay moneys and keep the accounts; submitting a correct statement at the annual meeting.

7. The meetings will be held on the third Monday of every month, at 7 P. M., in Winter, and at 8 P. M. in Summer.

8. The business of the meetings will be 1st., the exhibition of any plants or objects of interest, not to exceed half an hour; 2nd., reading, correcting if necessary, and approving the minutes of previous meeting; 3rd., voting in new members; 4th., the reports of standing committee; 5th., reading an essay, or discussion on a Horticultural subject approved at a previous meeting, and remarks on the same by members in rotation.

9. Any member may introduce a friend at a regular meeting.

10. No discussion or conversation allowed on any subject not connected with the objects of the Society.

11. Any member interrupting the proceedings by improper conduct, or disturbing the harmony of the meeting, may be expelled by a majority of the members present.

CANADIAN FRUITS IN ENGLAND.

Our horticultural readers in particular will be interested in the subjoined article from the *Gardeners' Chronicle*, a paper by no means lavish of its encomiums, on the contributions of Canada to the late Exhibition held in the Royal Horticultural Gardens at South Kensington, to which pomologists of all countries were invited to send specimens of their fruits. The Show was a splendid one; and not only Canada but the other British North American Colonies occupied a respectable position therein; as they did also in the great International Exhibition. These pleasing facts should incite us to continuous exertion, that the great capabilities of these extensive portions of Her Majesty's Empire may become better and more generally understood:

"The most remarkable feature of this meeting was the wonderfully fine collection of apples, &c., now on view in the Society's new Conservatory, from Canada. These come from the neighborhood of Lake Ontario, and are shown by the Hamilton Society of Practical Gardeners at the solicitation of Dr. Hurlburt, one of the Canadian Commissioners at the International Exhibition. Well may our transatlantic friends be proud of their apples, which equal, and in some instances surpass, even the very best English produce of that description. Magnificent as was the collection of apples shown the other day from Nova Scotia, it is fully equalled by that under notice. True, we want the external beauty of the carnation-striped Chebucto, and one or two others; but on the other hand, no such Ribston Pippins have been shown in this or any other year, that we can remember, as those from Canada. They measure individually a foot in circumference, and are of a rich golden yellow hue, beautifully painted and streaked with red. Scarcely less astonishing, as regards size and general appearance, are the examples of Gloria Mundi and Fall Pippin, which the collection contains; the latter is not unlike the former in shape, but it is more yellow in color, and has a tinge of red on the sunny side; Gloria Mundi, on the contrary, is of a pale green color, and covered all over with white specks, an appearance which it seldom or ever presents in this country. Of Catshead there are some fine fruit, as well as of Pumpkin Sweet, a large orange yellow kind mottled with red; Americaner, a conical yellow variety, red on one side; and Pound Pippin, a sort not unlike Nonesuch. Auchmar, a round small-eyed variety, greenish yellow streaked and mottled with red, measured a foot in circumference; what is called Hoary Morning appears to be Fearn's Pippin, but there is a beauty and delicacy of coloring about it which with us it never possesses; Bourassa, which was stated to be a native of Canada, looks not unlike the Royal

Russet; it is, however, beautifully covered with red on the sunny side. Swaar' is a medium sized green fruit [When ripe it is a golden yellow color. It was 'green' from being picked too early.] Vandevere a nice looking medium sized kind with a small eye and firmer, but otherwise something like Fearn's Pippin; concerning Golden Russeting, a small round apple, it is stated that it will keep till July, and that it never rots; on the contrary, it 'wilts' up, a character which its appearance fully bears out. Craigie's Graft is a conical firm variety, and a reported good keeper. Esopus Spitzenburg is a high conical middle-sized fruit, but in this instance scarcely up to the mark as regards brilliancy; Westfield Seek no Further is a pale green round sort below the middle size, and dark red on one side; Fall Genetiu, an irregular shaped apple, is the variety hitherto known in this country as Fall Pippin; but in reality it is very different, and not nearly so handsome as the sort shown in the collection under that name. What is called snow apple appears to be the same as the sort named La Fameuse, a small glossy red kind with snow white flesh. Northern Spy is a conical green kind, slightly streaked with red. [This had been gathered too early.] Colvert, pale green and round, specked and streaked with red; Tallman Sweet is a middle-sized, nearly white kind; Red Detroit is a dark red glossy apple, of attractive appearance; as is also Jonathan, another glossy red conical variety; 20-ounce Pippin and 20-ounce Branch are different sorts; the one is pale green and streaked with red, while the other is smaller, more conical, and darker in color. Of the Baldwin there are large sized specimens, as well as of a sort called Carjuga, [Probably the Cayuga Red Speck or 20-ounce Apple is referred to.] which measured thirteen inches in circumference. The last is a red streaked, firm, good-looking apple. A kind called Menagerie somewhat resembles Gloria Mundi, both as regards shape and size. Maiden Blush is a flat yellow sort, red next the sun. Of Blue Pearmain, the collection contains fine specimens; they are, however, a trifle smaller than fruit of that variety shown from Nova Scotia. Canada Reinette is a medium sized kind streaked with red; and of Emperor Alexander and Blenheim Orange, more handsome fruit could not possibly be produced than those in the collection now under notice. Wagener is a middle sized pale green kind, red on one side; and of Lady Apple and English Golden Pippin there are some small fruit; the last, which appears to be the true old Golden Pippin, is not, however, so fine as it is now and then found in this country.

"The whole of the apples just noticed have arrived in excellent condition, without speck or blemish. We however found all that we tasted much sweeter than the same sorts in this country, the hot summers of North America being unfavorable to the formation of the acidity which renders our English apples so delicious.

"Pears do not seem to have fared so well; for some which are shown are greatly decayed. Among them are Louise Bonne de Jersey, Forelle or Trent pear, the last beautifully colored and speckled with red; Winter, Nelis, Vicar of Winkfield, Beurree Rose, White and Gray Doyenne, Swan's Orange, Easter Beurree, Beurree Diel and Soldat Laborer, the last the same as the B. d'Aremberg. These are all paler in the skin, and in some instances smaller than the same kinds grown in this country.

"Of grapes there are several dishes of fair size for outdoor fruit; but all of them have the wretched foxy taste peculiar to most sorts of American Grapes. The sorts called Dalhousie and Ontario somewhat resemble Black Hamburg, from which they appear to be crosses; the Isabella has a grizzly appearance; others consisted of Diana, Delaware, Hamilton Black, Sweetwater, Concord, Lincoln, and Rebecca, the last a white sort with egg-shaped berries, and better flavor than some of the others.

"Other subjects consisted of fruit of the Black Walnut, American Chestnut (*Castanea americana*.) Haws of large size, Siberian Crabs, White Hickory Nuts, Quinces and Capsicums.

"Various examples of cereals, potatoes, onions and carrots, are also included in this magnificent exhibition of Canadian produce. We hope to see more of our Canadian friends' fruit at our exhibitions."

HOW TO TREAT DWARF PEARS.

I have them fifteen years old in my garden, thrifty, hardy, productive, and bidding as fair to live the next fifty years as any standard tree upon my grounds. The complaints against these pets of the garden, I am fully persuaded, are owing more to neglect, and mismanagement, than to any inherent difficulty. Some varieties will not flourish on the quince stock. The fruit books will point them out. Do not plant such. They will not be productive on grass land, or in hard inflexible soil. Do not plant them there. They want a deep, rich, mellow border, at least eighteen inches in depth. If you cannot afford to prepare a border, do not purchase dwarf pear trees. In addition to being properly planted, they must have care every season. Now they should be shortened in, about two-thirds of the last season's growth. This keeps them stocky, and prepares them to sustain a great burden of fruit. They also want a barrow full of stable manure put around them every fall. The quince roots cannot go far in search of food. They should have all they can take up within six or eight feet of the tree. With manure and good management dwarf pears will be a success.—*American Agriculturist*.

Domestic.

GENERAL DIRECTIONS FOR MAKING SOUPS.

[We shall occupy a page or two of each number with matters pertaining to Domestic Economy, and shall be obliged for any original communications that are founded on practical experience. Care will be exercised in making selections only from the best accredited authorities. The following information on the methods of preparing soups is taken from Mrs. Beeton's "Book of Household Management;" a recent English publication of acknowledged merit.—Eds.]

LEAN, JUICY BEEF, MUTTON AND VEAL, form the basis of all good soups; therefore it is advisable to procure those pieces which afford the richest succulence, and such as are fresh-killed. Stale meat renders soups bad, and fat is not well adapted for making them. The principal art in composing good rich soup is so to proportion the several ingredients that the flavour of one shall not predominate over another, and that all the articles of which it is composed shall form an agreeable whole. Care must be taken that the roots and herbs are perfectly well cleaned, and that the water is proportioned to the quantity of meat and other ingredients, allowing a quart of water to a pound of meat for soups, and half that quantity for gravies. In making soups or gravies, gentle stewing or simmering is absolutely necessary. It may be remarked, moreover, that a really good soup can never be made but in a well-closed vessel, although, perhaps, greater wholesomeness is obtained by an occasional exposure to the air. Soups will, in general, take from four to six hours doing, and are much better prepared the day before they are wanted. When the soup is cold the fat may be easily and completely removed; and in pouring it off, care must be taken not to disturb the settlings at the bottom of the vessel, which are so fine that they will escape through a sieve. A very fine hair sieve or cloth is the best strainer, and if the soup is strained while it is hot, let the tamis or cloth be previously soaked in cold water. Clear soups must be perfectly transparent, and thickened soups about the consistency of cream. To obtain a really clear and transparent soup, it is requisite to continue skimming the liquor until there is not a particle of scum remaining, this being commenced immediately after the water is added to the meat. To thicken and give body to soups and gravies, potato-mucilage, arrow-root, bread-rasplings, isinglass, flour, and butter, barley, rice, or oatmeal, are used. A piece of boiled beef, pounded to a pulp, with a bit of

butter and flour, and rubbed through a sieve, and gradually incorporated with the soup, will be found an excellent addition. When soups and gravies are kept from day to day in hot weather, they should be warmed up every day, put into fresh-scalded pans or tureens, and placed in a cool larder. In temperate weather, every other day may be sufficient. Stock made from meat only, keeps good longer than that boiled with vegetables, the latter being liable to turn the mixture sour, particularly in very warm weather.

Stocks for all kinds of Soups.

Rich Strong Stock.

INGREDIENTS.—3 lbs. of shin of beef, 3 lbs. of knuckle of veal, $\frac{1}{4}$ lb. of good lean ham, any poultry trimmings, 2 oz. of butter, 3 onions, 3 carrots, 2 turnips (the latter should be omitted in summer) (lest they ferment), 1 head of celery, a few chopped mushrooms when obtainable, 1 tomato, a bunch of savoury herbs, not forgetting parsley; $1\frac{1}{2}$ oz. of salt, 3 lumps of sugar, 12 white peppercorns, 6 cloves, 3 small blades of mace, 4 quarts of water.

Mode.—Melt the butter in a delicately clean stewpan, and put in the ham cut in thin broad slices, carefully trimming off all its rusty fat; cut up the veal in pieces about 3 inches square, and lay them on the ham; set it on the stove, and stir frequently. When the meat is equally browned, put in the beef and veal bones, the poultry trimmings, and pour in the cold water. *Skim well*, occasionally add a little cold water, to stop its boiling, until it becomes quite clear; then put in all the other ingredients, and simmer very slowly for 5 hours. Do not let it come to a brisk boil, so that the stock be not wasted, and its colour preserved. Strain through a very fine hair-sieve or cloth, and the stock will be fit for use the next day.

Time, 5 hours.

Medium Stock.

INGREDIENTS.—3 lbs. of shin of beef, or 3 lbs. of knuckle of veal, or 2 lbs. of each; any bones, trimmings of poultry, or fresh meat; $\frac{1}{4}$ lb. of lean bacon or ham, 2 oz. of butter, 2 large onions, each stuck with 3 cloves; 1 turnip, 3 carrots, $\frac{1}{2}$ a leek, 1 head of celery, 2 oz. of salt, 3 lumps of sugar, $\frac{1}{2}$ a teaspoonful of whole pepper, 1 large blade of mace, 1 small bunch of savoury herbs, 4 quarts and $\frac{1}{2}$ a pint of cold water.

Mode.—Cut up the meat and bacon or ham into pieces about 3 inches square; rub the butter on the bottom of the stewpan; put in $\frac{1}{2}$ a pint of water and the meat, cover the stewpan, and place it on a sharp fire, occasionally stirring its contents. When the bottom of the pan becomes covered with a pale firm gravy, add the 4 quarts of cold water, with all the other ingredients: and simmer very gently for 5 hours. As we have said before, do not let it boil quickly. Remove every particle of scum while it is doing, and before putting it away in the larder, strain it through a fine hair-sieve.

This stock is the basis of many of the soups afterwards mentioned, and it will be found quite strong enough for ordinary purposes.

Time, 5 hours.

Economical Stock.

INGREDIENTS.—*The liquor in which a joint of meat has been boiled, say 4 quarts; trimmings of fresh meat or poultry, shank bones, &c., roast-beef bones, any pieces the larder may furnish; vegetables, spices, and the same seasoning as in the foregoing recipe.*

Mode.—Let all the ingredients simmer gently for 5 hours, taking care to skim carefully at first. Strain the stock off, and put it by for use.

Time, 5 hours.

White Stock.

INGREDIENTS.—4 lbs. of knuckle of veal, any poultry trimmings, 4 slices of lean ham, 1 carrot, 2 onions, 1 head of celery, 12 white peppercorns, 1 oz. of salt, 1 blade of mace, 1 oz. of butter, 4 quarts of water.

Mode.—Cut up the veal, and put it with the bones and trimmings of poultry, and the ham, into the stewpan, which has been rubbed with the butter. Moisten with $\frac{1}{2}$ a pint of water, and simmer till the gravy begins to flow. Then add the 4 quarts of water with the remainder of the ingredients: and simmer for 5 hours. After skimming and straining it carefully through a very fine hair-sieve, it will be ready for use.

Time, 5½ hours.

Note.—When stronger stock is desired, double the quantity of veal, or put in an old fowl. The liquor in which a young turkey has been boiled is an excellent addition to all white stock of soups.

To Clarify Stock.

INGREDIENTS.—*The whites of two eggs, $\frac{1}{2}$ pint of water, 2 quarts of stock.*

Mode.—Supposing that by some accident the soup is not quite clear, and that its quantity is 2 quarts, take the whites of 2 eggs, carefully separated from their yolks, whisk them well together with the water, and add gradually the 2 quarts of boiling stock, still whisking. Place the soup on the fire, and when boiling and well skimmed, whisk the eggs with it till nearly boiling again; then draw it from the fire, and let it settle, until the whites of the eggs become separated. Pass through a fine cloth, and the soup should be clear.

Note.—The rule is, that all clear soups should be of a light straw-colour, and should not savour too strongly of the meat; and that all white or brown thick soups should have no more consistency than will enable them to adhere slightly to the spoon when hot.

Carrot Soup.

INGREDIENTS.—4 quarts of liquor in which a leg of mutton or beef has been boiled, a few beef bones, 6 large carrots, 2 large onions, 1 turnip, seasoning of salt and pepper to taste, 3 lumps of sugar, cayenne.

Mode.—Put the liquor, bones, onions, turnip, pepper and salt, into a stewpan, and simmer for 3 hours. Scrape and cut the carrots thin, strain the soup on them, and stew them till soft enough to pulp through a hair-sieve or coarse cloth; then boil the pulp with the soup, which should be about the consistency of pea soup. Add cayenne. Pulp only the red part of the carrot, and make this soup the day before it is wanted.

Time, 4½ hours. Seasonable from October to March. Sufficient for 8 persons.

Celery Soup.

INGREDIENTS.—9 heads of celery, 1 teaspoonful of salt, nutmeg to taste, 1 lump of sugar, $\frac{1}{2}$ pint of strong stock, a pint of cream, and 2 quarts of boiling water.

Mode.—Cut the celery into small pieces; throw it into the water, seasoned with nutmeg, salt, and sugar. Boil it till sufficiently tender; pass it through a sieve, add the stock, and simmer it for half an hour. Now put in the cream, bring it to the boiling point, and serve immediately.

Time, 1 hour.

A good Family Soup.

INGREDIENTS.—*Remains of a cold tongue, 2 lbs. of shin of beef, any cold pieces of meat or beef bones, 2 turnips, 2 carrots, 2 onions, 1 parsnip, 1 head of celery, 4 quarts of water, $\frac{1}{2}$ teaspoonful of rice; salt and pepper to taste.*

Mode.—Put all the ingredients in a stewpan, and simmer gently for 4 hours, or until all the goodness is drawn from the meat. Strain off the soup, and let it stand to get cold. The kernels and soft parts of the tongue must be saved. When the soup is wanted for use, skim off all the fat, put in the kernels and soft parts of the tongue, slice in a small quantity of fresh carrot, turnip, and onion; stew till the vegetables are tender, and serve with toasted bread.

Time, 5 hours. Seasonable at any time. Sufficient for 8 persons.

Gravy Soup.

INGREDIENTS.—4 lbs. of shin of beef, a piece of the knuckle of veal weighing 3 lbs., a few pieces of trimmings of meat or poultry, 3 slices of nicely-flavoured lean ham, $\frac{1}{2}$ lb. of butter, 2 onions, 4 carrots, 1 turnip, nearly a head of celery, 1 blade of mace, 6 cloves, a bunch of savoury herbs, seasoning of salt and pepper to taste, 3 lumps of sugar, 5 quarts of boiling soft water. It can be flavoured with ketchup, Leamington sauce, or Harvey's sauce, and a little soy.

Mode.—Slightly brown the meat and ham in the butter, but do not let them burn. When this is done, pour to it the water, put in the salt, and as the scum rises take it off; when no more appears, add all the other ingredients, and let the soup simmer slowly by the fire for 6 hours without stirring it any more from the bottom; take it off, and pass it through a sieve. When perfectly cold and settled, all the fat should be removed, leaving the sediment untouched,

which serves very nicely for thick gravies, hashes, &c. The flavourings should be added when the soup is heated for table.

Time, 7 hours. Seasonable all the year. Sufficient for 12 persons.

Poultry.

ILLNESS IN FOWLS.

Most illnesses are caused by bad constitution, and this is the result of accidents, the causes of which are unknown; sometimes they come from feeble parents, from lack of care and insufficiency of food during growth, or continued ill treatment. But whatever may be the determining cause of illness in a fowl, it is not less true that if there is a desire to cure it, it will take as much science, as much care, and as much expense as a sick horse. As this is next to impossible, the shortest and simplest of all remedies is to cut the patient's throat; you will thereby get rid of an unproductive animal, capable of only propagating in the poultry-yard the disease with which it is infected. When robust birds become ill, it is always caused by dirty water or houses, or by infection bred in the small spaces wherein they are confined, or by the lack of substance they would find if they were at liberty.

It is, then, by the hygienic cares of every description that are pointed out in this work that we must prevent those attacks, which very often become contagious, causing serious damage on large farms, and irreparable loss to amateurs. Some useful indications may in certain cases help to preserve a valuable animal.

The most frequent maladies are nasal catarrh (discharge from the nostrils), canker on the tongue and in the throat, and lastly ophthalmia. These affections are almost always indications of a bad or vitiated constitution; they may also be caused by draughts, by infected houses or tainted runs, or by unwholesome food or water; and in delicate breeds, such as the *Creve Cœur*, *Hamburg*, and *Dorking*, by a simple change of locality or habits. In the first case it is almost incurable, and in the other it is absolutely necessary to isolate the patients or to lot them in ones, twos or threes of small-floored compartments kept very clean and sanded. The nostrils, the eyes, and the interior of the beak should be washed every morning with slightly acidulated water. If canker produces a thick or hard sticky discharge, it should be removed with a sharp wooden spatula; the place should be washed, and, if possible, cauterised with nitrate of silver. Refreshing food, such as millet, dough made of barley flour, grass, and very clean water, complete the treatment. As fast as the birds are cured they are let out to regain strength and vigor in those places where there is the greatest amount of vegetation.

A barbarous custom, as ridiculous as it is abominable, consists in tearing off the horny tip

of the tongue in order to cure the malady called the pip, and which is only canker or *apthe*. This substance is as natural to the tongue as the nail is to the finger. I have seen people take a sick hen, examine the beak, then, seeing it was sufficient from canker or *apthe*, take a pin and tear off the end of the unhappy patient's tongue. As a precautionary measure all the birds in the yard were examined. As they all had the horny tip, it was settled all were about to suffer from the canker, and then all hands set to work to mutilate the entire poultry yard. The wound it causes is long in healing, and sometimes incurable. One of the most dangerous maladies, because, in time, and almost imperceptibly, it will invade a whole yard, young and old, is a disease I will call the *white*: or sort of itch, evidently caused by invisible "vegetations," which appear first on the feet, on the combs, on the wattles, on the cheeks, and on the deaf-ears, in the form of small flour covered patches. These patches extend and thicken till they stop the ear, form crusts on the face, make holes in the legs, raise up the scales, and cause them to fall, and at last invade the whole animal. As soon as the appearance of white is ascertained, a remedy is at hand which is a certain specific. It is merely sulphur ointment, the recipe for which is powdered or flowers of sulphur and lard or hog's fat in equal quantities. These two substances thoroughly kneaded together for a long time will form a very thick ointment, which should be abundantly applied. If the white is of old date and very floury, a cutting instrument should be used, and the parts scraped with it to the quick, even in the most difficult places; the ointment should be abundantly applied, and renewed every third day, till a cure is effected.

The ointment should be applied wherever it is necessary, care being taken to raise the feathers in layers, all over. Gout makes a direct appeal to the fatal knife, the same may be said for consumption, chilblains, convulsions and fractures. To conclude with a general rule, every fowl sick of any malady should if a cure is desired, be put by itself, and fed as has been described. I have almost always found this successful without any other treatment.—*From M. Jacque's Work on Poultry.*

FEEDING HENS IN WINTER.

The following is furnished the *American Agriculturist* by a correspondent:

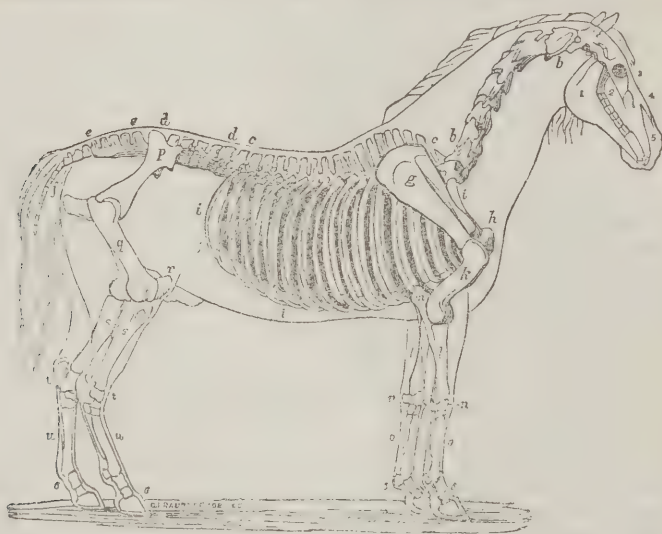
"I have twenty-eight chickens, large and small, several of them fall chickens. I obtained but a few eggs in the fore part of the winter—not more than one or two a day. The feed was corn and oats. In January I tried the experiment of hot feed once a day, in the morning. As soon as the fire was started in the cook stove, I put a quart or so of small potatoes in an old dripping-pan, and set them in the oven. After breakfast I took a quart or more of wheat and buckwheat bran, mixed, put it in the swill-pail,

and mixed into thin mush with boiling water, then added about one quart of live coals from the stove, and put in the potatoes hot from the oven, adding all the egg shells on hand, and sometimes a little salt, and sometimes a little sulphur. These mashed together, are fed immediately in a trough prepared for that purpose, make about ten feet long, of two boards six inches wide, nailed together, and two short pieces nailed on the ends, with a narrow strip nailed lengthwise on the top, and two bearers under. The object of this was to keep the hens out of the trough, and leave room to eat each side of

the narrow strip. At noon I fed six ears of corn cut up in pieces an inch long; and in the evening oats and wheat screenings about a quart. Now for the result. In about a week the number of eggs increased six fold, and in about two weeks, and since, they have ranged from twelve to twenty eggs per day. The coldest weather made no difference. When it was cold and stormy I kept them in the henhouse all day, and generally until ten or twelve o'clock. Such singing over the corn at noon I never heard from hens before—a concert of music that would have done any lover of eggs good to hear."

Veterinary Department.

Conducted by A. SMITH, V. S.



THE HORSE.

Of all domesticated animals the horse may be said to rank the highest, and presents the greatest number of different breeds, and varying in size and strength, perhaps, more than any other quadruped. What a contrast to behold the majestic dray horse weighing two thousand pounds, side by side with the Shetland pony; and yet both sharing that symmetry of form, combined with docility and power of endurance, unequalled by any other of the lower animals, and both so well suited for the duties they are required to perform.

The above cut represents the skeleton of the Horse, and the following remarks will be confined to the osseous system and description of the skeleton.

Bones, or the osseous system, are a solid framework in the animal structure, and are the

hardest, and in a state of health, the most insensible substances in the entire body. They differ in their form, size and strength, according to the situation and importance of the position which they occupy; some serving as pillars of support, as the legs, others for the protection of delicate organs, and all affording attachment for the softer parts. Bone is the result of a combination of certain organic salts with a previous existing animal basis possessing a certain degree of hardness and elasticity. To the inorganic or earthy matter bone owes its hardness, and to the animal matter its toughness and elasticity.

The earthy and animal matters are ultimately blended together, in the proportion of two thirds earthy to one-third of animal. These substances by certain processes can be separated; if bone is immersed in Hydro-chloric acid for a space of time the earthy matter will be dissolved out, the animal matter retaining the shape of the bone; again if a bone is exposed to a red

heat with free access of air the animal matter will be burned out.

Analysis of Bone.

The earthly matter consists of	
Phosphate of Lime.....	51.04
Carbonate of ".....	11.30
Fluoride of Calcium.....	2.00
Phosphate of Magnesia.....	1.16
Chloride of Sodium.....	
The animal matter is composed of	
Chondrine.....	32.17
Fat.....	1.13

The above is the analysis of healthy bone, in disease the constituents vary. In young animals the bones of the legs sometimes bend very much, this occurrence is owing to a deficiency of earthy matter, and is common in foals and dogs. In old age the bone becomes more brittle and in some cases quite fragile, this arises from a decrease of animal matter.

The bones of the horse are two hundred and forty two in number, and form what is termed the skeleton. In studying the skeleton anatomically, for description it is divided into Head, Trunk, and Extremities.

The trunk consists of the vertebral column, ribs, sternum and pelvis, the vertebral column is made up of a number of single bones termed vertebrae, united to one another by an elastic cartilaginous substance. This column is subdivided into four regions, viz., (B B) the cervical, or those of the neck, (C C) the dorsal, or those of the back; the lumbar, those of the loins; and (E E-F) the sacro coxeygeal including sacrum and bones of the tail.

Each region possess certain characters peculiar to itself—a true vertebra has a body, an arch; spinous, oblique, and transverse processes, a hole called the vertebrae foramen, through which passes the spinal cord.

The vertebrae of the neck, or cervical, are seven in number, they possess much longer and larger bodies, than any other vertebrae. The dorsal, or those of the back, are eighteen in number, and are the principal agents in supporting weight, their bodies are smaller than those of any other vertebrae and are short, thick, and somewhat circular—the spinous processes are long and flat—the spine of the first is the shortest, gradually increasing in length to the fifth, which is termed the point of the withers; from the fifth to the thirteenth they gradually decrease in length and incline backwards. The vertebrae of the loins or lumbar are shorter in their bodies in proportion to the size of the horse than in any other animal, they are six in number and are more symmetrical in form than the vertebrae of either the back or neck.

The sacrum or rumpbone in the foetus is made up of five distinct bones, united by fibro cartilage, in the adult becoming ossified, it forms the superior part of the pelvis, P. The pelvis is formed by two bones called the ossa innominata, situated one on each side of the spine. The ossa innominata is made up of three bones joined

together at the acetabulum, the three bones forming it are the ilium, ischium, and pubis. The upper part of the ilium is broad and expanded, forming what is called the haunch or hip bone, and terminating anteriorly in four eminences; of the two larger, one is called the superior, the other the inferior anterior spine; the others are called tubercles, and are all for the attachment of the large muscles which occupy this region. When the superior anterior spine is knocked off the horse is said to be hipped.

The lower part of the ilium forms with the ischium, and pubis a cavity called the acetabulum which unites with the head of the Femur (Q) or whirlbone forming the hip joint.

The ischium is flat and quadrilateral in shape, and extends from the acetabulum backwards, terminating in a prominence called the tuberosity of the ischium; this part is often knocked down from blows, &c., giving rise to a flat appearance of the hind quarters. The pubis forms the centre part of the pelvis, the juncture of the two is called the symphysis pubis.

Connected with the vertebral column are the ribs (iii). These consist of a series of bony arches usually thirty-six in number, eighteen on either side; occasionally there exists thirty-eight and even forty ribs; they are divided into two classes, true or sternal, false or asternal. The true ribs are those whose cartilages are inserted into the sternum or breast-bone, eight in number. The false are only connected with the sternum through the intervention of others. The upper extremity of each rib is divided into three parts, head, neck, and tubercles; between the head of each rib and the body of the vertebrae there exists a true synovial joint. Running along the posterior border of all the ribs, with the exception of the first is a groove in which lie the intercostal bloodvessels and nerves.

The extremities are divided into fore and hind, the fore extremity consists of (G) the scapula, (K) humerus, (L) radius, (M) ulna, (N) carpus or knee, corresponding to the wrist in the human subject, (O) the metacarpal or shank bones and (6) bones of the pastern and foot.

Editorial Notices, &c.

The British Reviews!—

We have received, through Mr. Rowsell, of this city, the American Edition of the current numbers of the *London Quarterly*, the *Edinburgh*, and the *North British Reviews*. In these able exponents of British literature, science and politics, the reader is kept acquainted with the state and progress of all great questions affecting the political, social, and moral condition of mankind generally. Each of these Reviews has a characteristic article on the great American conflict in the current numbers.

that will be read with much interest on this side of the Atlantic. *Blackwood's Magazine* for November likewise contains a vigorously written article on the same topic. We have so frequently recommended this cheap and excellent reprint of the leading British Reviews that a mere statement of the contents of the numbers now lying before us will suffice.

The *London Quarterly* contains eight articles:—*Les Miserables*; *The Platonic Dialogues*; *Modern Political Memoirs*; *Belgium*; *The Waterloo of Thiers and Victor Hugo*; *Aids to Faith*; *China—the Taeping Rebellion*; and *the Confederate Struggle and Recognition*.—The *Edinburgh* has eleven articles:—*Solar Chemistry*; *The Herculean Papyri*; *The Mussulmans in Sicily*; *The Supernatural*; *The English in the Eastern Seas*; *The Legend of St. Swithin*; *Life of Edward Irving*; *The Mansoleum at Halicarnassus*; *Hops at Home and Abroad*; *Prince Eugene of Savoy*; *The American Revolution*.—The *North British* has nine articles, viz.: *Christian Individuality*; *The Austrian Empire in 1862*; *Poems by A. H. Clough*; *Assimilation of Law*; *France and Scotland*; *Popular Prophetic Literature*; *Syria and the Eastern Question*; *St. Clement's Eve*; *The American Conflict*.

The price of each Review is \$2; or with *Blackwood's Magazine*, \$5. The four *Quarterlies* and *Blackwood's* monthly, for \$10: a sum scarcely equal to one third of the published price in Britain. New York: Leonard Scott & Co., 79 Fulton street; and the principal Booksellers throughout Canada.

THE RURAL ANNUAL AND HORTICULTURAL DIRECTORY. Rochester, N. Y. Joseph Harris. 1863.

This neat little volume forms the eighth of the series, and to say that it is not one whit behind—whether in matter or execution—the best of its predecessors, is to award no small meed of praise. It consists of 100 well printed pages, profusely illustrated by wood-cuts, and treats on numerous subjects relating to the farm and garden, domestic economy, and rural affairs generally. The price for a single copy is only 25 cents. Clubs or dealers, by taking quantities will be supplied at the usual discount, by applying to Mr. Harris of the *Genesee Farmer*, Rochester, N. Y.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES FOR UPPER CANADA.

We have much pleasure in calling the attention of our readers to this useful and well conducted periodical. In order to increase its circulation among the mechanical and manufacturing classes of all descriptions, the Board has resolved on lowering the subscription to 50 cents per copy for the year, or 11 copies for \$5. It is published monthly, under the able editorship of Professor Hind, and our agricultural societies could confer a benefit on their members—especially the mechanical portion of them—by encouraging the circulation of this interesting and valuable serial. Communications should be addressed to Mr. William Edwards, Secretary of the Board of Arts and Manufacturers, Toronto.

GALLOWAY CATTLE.—The Galloway cattle have apparently proved themselves well suited to the climate and other circumstances of Canada. They are thrifty and hardy, produce a good carcass of excellent quality of beef, and yield a very fair quantity and quality of milk. These cattle have a strong and vigorous constitution, and being a distinct breed, when crossed with another breed they frequently impress their characteristics upon the produce so strongly as to render it difficult for any but the most experienced judges to distinguish the first cross from the pure bred animal. This circumstance renders deception, should any be disposed to practice it, in the sale or exhibiting of animal of this breed, comparatively easy; and the purchaser of such half-bred animals, with the intention of breeding from them would be grievously disappointed in the result, for the next produce from them would soon exhibit evidences of the intermixture of blood. It is with the view of devising a system by which the pedigrees of Galloway cattle can be collected and registered, and thus enable purchasers to obtain certificates of pedigree in which they can place confidence, that a meeting of Breeders and owners has been called, which will be found advertised in another column.

LAST YEARS' VOLUME.—In answer to a correspondent, we beg to say that we have still a good many copies of last years' volume on hand; as also of the preceding year, 1861.

THE CANADIAN AGRICULTURIST

AND JOURNAL OF THE
BOARD OF AGRICULTURE
OF UPPER CANADA.

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EDITORS:

Professor Buckland, University College, Toronto. Hugh C. Thomson, Secretary Board of Agriculture of Upper Canada. Andrew Smith, Licentiate of the Edinburgh Veterinary College and Consulting Surgeon to the Board of Agriculture of Upper Canada.

All orders to be addressed to the Secretary of the Board of Agriculture, Toronto.

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Toronto, December, 1862.

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Ang. 30th, 1862.

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THE UNDERSIGNED, Breeders of Galloway Cattle, feeling the importance of maintaining the reputation of the Herds of this valuable Breed in Canada for purity of descent, and it being necessary to this end that the true Pedigrees of the animals of pure blood now in, or which may hereafter be in the Province, should be carefully preserved and registered in a permanent form for reference, hereby request all the Breeders and owners of Galloways in Upper Canada, to attend a meeting at the Rooms of THE BOARD OF AGRICULTURE, Toronto,—

On WEDNESDAY the 4th day of FEBRUARY next, at noon, for the purpose of arranging a system of co-operation in Carrying out this object.

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The course will commence on *Wednesday, January 21st*, 1863, and continue for about six weeks. Three Lectures a day, and *no fees*.—The subjects treated of will comprise:—

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Horse Infirmary and Veterinary Establishment, Corner of Bay and Temperance Streets, Toronto, C. W.

A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

And also begs to announce that Veterinary Medicines of every description are constantly kept on hand:—Such as, Physic, Diuretic, Cough Cordial, Tonic Condition, and Worm Balls and Powders. The constituents composing the Cough-balls, have been found (by Professor Dick, of Edinburgh) most serviceable in alleviating many of the symptoms of Brokenwind or Heaves in Horses. Colic Draughts, &c., a mixture which owners of Horses should always have beside them.

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Toronto, Aug. 30th, 1862.

THE
Canadian Agriculturist
AND
JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV. TORONTO, FEBRUARY, 1863.

No. 2.

THE SEASON.

It must be confessed that up to this period, the end of January,—the present winter has been distinguished by somewhat remarkable characteristics. With the exception of two periods, each consisting of only a few days, the thermometer has indicated both night and day, an unusually high temperature; so much so indeed at the commencement of the year fears began to be established that fruit buds would be brought into premature and dangerous activity. The Horse chestnut and the buds of some other trees actually began to swell in warm, sheltered situations. Since then the average temperature has been sufficiently low to prevent danger from this cause. Snow has fallen at different times, and in some districts to a moderate depth, enough to render the country roads practicable by sleighs for a few days only, when a rapid thaw would set in, and leave the ground almost bare, and the roads in the worse possible condition for travelling. Apart from this draw-back the season on the whole has been pleasant, with a number of dry and warm days, reminding one more of the first opening of spring than mid-winter. There has been however on the whole an absence of bright sun shine. Some people have begun to entertain fears for the safety and well-doing of fall wheat: but from the information that has reached us we incline to the belief that as

yet no serious mischief has been done. In flat, wet land the plant has no doubt been subjected to injurious influences by the frequent melting of the snow and its congealing into ice, and in such situations, especially should the more advanced season prove unfavourable—the results may prove disastrous. On dry, warm and well farmed lands the wheat plant exhibited at the commencement of winter a strong and healthy growth; and where sown early, as was done by many last fall, the check which the plant has received must be regarded as beneficial. March and April are in general the most trying period for wheat in Canada; the alternate freezing by night and thawing by day, under the increasing power of warm sunshine, produces the “throwing out” of the plants, which no subsequent artifice can thoroughly correct. Rolling, however, has often been advantageously applied as soon as the state of the ground will admit of the operation. Upon the whole, we incline to the hope that up to the present our prospect for wheat has not been materially affected. Prices for this article continue low, although the last year’s crop, except in some few isolated sections of country, was characterized neither by abundance of yield, nor goodness of quality. And although the English wheat crop was originally deficient, yet that being an open cash market, to which all countries can readily send their surplus produce, prices have ruled low, with little to

indicate any material advance for the future. Nor has the unhappy American civil war affected prices for agricultural produce; except, perhaps, barley, as was at one time anticipated. The state of exchange and other circumstances, have operated as serious checks to a large and profitable intercourse between these provinces and the United States. It is devoutly to be wished that the deplorable cause which has produced this state of things may be speedily removed.

The present remarkably mild and open season, although rendering intercourse difficult in the country, and in some places quite impracticable for want of sufficient snow, is attended by several solid and important advantages. To the poor in cities it must be felt as a boon, in diminishing the amount of fuel required, an article high in price. The farmer, too, will reap a benefit in his cattle not needing so large a quantity of provender as they would in a more inclement season. This is fortunate, as the stock of hay, roots, &c., is in most parts of the country under an average. A severe and protracted winter must have caused the price of such articles to have risen to a disastrous pitch. As it is, the farmer by judiciously economising his scanty stock of cattle food, will be enabled to push through with comparative ease. His vigilance in this important matter should not relax, as in all probability the longest and severest portion of winter is yet to come. The advantages of feeding stock with a mixture of cut food, cannot be too often impressed on the minds of farmers: in this way the coarser and less valuable kinds are readily consumed. A regular, though small supply of turnips, carrots, mangels, &c., will astonishingly economise hay and keep animals in a healthy and thriving condition. Sheep, especially breeding ewes, will now require special attention, both as regards food and protection, and as the lambing season approaches, additional care should be bestowed. Sheep, although they require to be kept warm and dry, must have plenty of room for exercise, and unrestricted access to free and fresh air. No animal perhaps, so soon deteriorates from confinement as the sheep, and over pampering is almost as injurious as entire neglect. On the whole then

there is reason to hope, that with proper attention to the preparation and mixture of food, warmth, cleanliness and ventilation, with *regular feeding*, although it may not be so large in amount, nor so good in quality as might be desired, the farmer will be able to carry his stock through the winter in a much better condition than was anticipated.

FLAX CULTIVATION.

EDITORS OF THE AGRICULTURIST,—Dear Sirs. —As it appears from all I read in the *Agriculturist*, and hear from my German and North of Ireland neighbors, that the culture of a certain portion of flax each year, would be more profitable to the farmers of Bruce than so much wheat, the question arises, if we grow it what will we do with it? To take it sixty miles to market in an undressed state certainly would not pay. The next question is, if we could induce some person of enterprise and means to bring in a scutching mill, where could it be obtained, and what would it cost? what power would it take to work it? In short, what amount of capital would it take to set a flax-dressing establishment in operation? And last, but not least, how many acres of flax must we grow annually to make the mill a remunerative investment? If you can suggest some plan upon which we can make flax growing profitable I will use my humble endeavors to get the farmers of Carrick and Brant at it.

I remain yours, &c.,

RICHARD RIVERS, JUNR.

Carrick, Jan. 14th, 1863.

[We answer the questions of our correspondent with pleasure, so far as we are able. The want of a ready market has certainly been the greatest obstacle in the way of the cultivation of flax. Parties who have grown small quantities have found themselves unable to dispose of it at a remunerating price. There is every reason to hope, however, that this difficulty will very shortly be removed. From the high price of flax at present in the British markets, there is not the least doubt that buyers will appear here to gather up what is grown in the country if they can only find a sufficient quantity to make it worth their while. Every farmer therefore should grow some flax with the view of aiding to create the new trade. Besides it always pays to grow a small quantity for home use. The seed is valuable for stock, and can always be sold readily at a good price. Rowan & Sons' scutching machine, manufactured at Belfast,

Ireland, is, we believe, as good as any in the market. It costs in Ireland about £20 to £25 sterling, and could be imported to this country for about \$150 to \$180, including cost, freight and duty. There are several of these mills in the country already, and they have been found to work satisfactorily. If a considerable demand should arise for them they would doubtless be manufactured here, and would then become cheaper than if imported. A steam engine or driving power of a thrashing machine of two to four horse power is sufficient to work the machine. Steam or water power is better than horse power, being more easily regulated. The cost of the motive power, whether horse or steam, would be, say not over \$300, to \$400, and the entire capital required to establish such a machine in operation, would probably not exceed \$500. It must be observed however, that the machine is portable, and can be taken from place to place, making use of the motive power already established for other purposes. If the machine was made stationary, of course a building would be required, in addition to the cost of the machine and motive power. One hundred acres of good flax would be sufficient to keep a single machine employed a great part of the year, but a much less quantity would pay for the introduction of a machine into a neighborhood.

As to making flax growing profitable, the principal point is to grow a good crop and dress it properly. It will then be sure to be profitable, when once a trade in the article is established. It will be even profitable as things stand at present on a small scale, for the seed and domestic use.

We have already given ample directions in this Journal for the cultivation of the crop and preparation of the fibre, and may probably refer to the subject again on some other occasion. We shall be glad to hear from our correspondent as to the success of his endeavors to promote the cultivation in his neighborhood.—Eds.]

WHEAT GROWN FROM OATS AND BARLEY.

EDITOR OF THE AGRICULTURIST.—DEAR SIR,—The subjoined, which I copy from the London (Eng.) *Times* of the 10th Dec., 1862, may be interesting to some of your readers.—Yours, &c.,

WM. A. COOLEY.

Ancaster, Jan. 7, 1863.

"The following letter, dated Wappenham,

near Towcester, Northamptonshire, appears in the last number of the *Berkshire Chronicle*:—

'In answer to your letter, dated December 2nd, it is a positive fact that I grew both wheat and barley from oats. The wheat I continued to grow up to last year, but in consequence of the crop going off I was obliged to fill it up with spring wheat. The wheat I grew from the Dutch oat was a beautiful quality, small seed, weight 65 lbs. per bushel, light-coloured chaff, fine straw and blade. The wheat I grew for about 10 years, and sold lots of it to my neighbors for seed. Now I am growing a coarser wheat that a neighbour of mine grew from the Poland oat. That is a much stronger straw and larger ear, but is very apt to mildew the last few seasons. The way I adopted was to plant it thin, under a sheltered wall, the middle of June; it then will require to be cut off about one inch from the ground before coming into bell three times the first season; the following year it produced the wheat I speak of. Many people saw it when growing; it was a very thin berry the first year. The difficulty is in keeping the root to stand the winter. At the Towcester Union theirs produce barley, and mine has the same from a coarse oat. Black oats will produce rye the same way. You are quite at liberty to make use of my name,

"From yours truly,

"WILLIAM COWPER."

"MR. CHAS. SIMMONS."

We insert the above as a curiosity, without endorsing the correctness of the conclusions. The transmutation of distinct species of the vegetable kingdom into one another involves a doctrine that has been almost universally rejected by the highest authorities in natural history. If such were the case it is difficult to conceive how the uniformity of nature, in her grand outlines, could be maintained. We think there is probably a mistake or fallacy somewhere. There are no doubt a number of facts which seem anomalous, and not easily explained in the present state of knowledge. We subjoin an interesting article on this subject, from a recent number of the *Mark Lane Express*:—

Transmutation of Oats into Rye.

A correspondent has written to us requesting information respecting the transmutation of oats into barley and rye, a statement on the subject having appeared in this journal some months since, in a letter from a correspondent. We will first repeat the fact stated in that letter, and then endeavor to explain, as well as we can, the *rationale* of the phenomenon, as deduced from the nature of the plant. It appears that a farmer in Huntingdonshire having heard of the transmutation of oats into rye, resolved to try an experiment of the kind. He accordingly planted some carefully selected grains of oats singly in his garden, in the month of June.

When they had shot up to about a foot or a foot and a half in height he cut them down. Fresh tillers sprung from the roots, and were *again* cut down when they had reached the same height. Other tillers again sprang up rapidly, and the cutting down was repeated a *third time*; after which, although a new set of tillers formed, it was too late in the season to be again cut, and they were allowed to take their chance for the winter. Some of the plants died, but enough of them survived to test the experiment. They shot up into ear at an early period; but to the surprise of the farmer, instead of rye, the produce was perfect barley—rather thin, but by no means of a bad type. This was sown the following spring, and yielded a good return, of a quality much better than the seed. So much indeed is the barley approved by both the farmers and the malsters, that the experimenter has been able to sell all he grows, for seed corn. We have now a sample of it before us, which we have shown to merchants and malsters in Mark lane, all of whom pronounce it to be an excellent malting kind. So much for the experiment, the truth of which the character of the gentleman concerned stands too high to admit of any doubt. We will now endeavor to explain the rationale of the case, and shall first show the cause of the oats remaining alive through the winter; and, secondly, *endeavor* to account for the change or transmutation it undergoes in such circumstances.

First, all the cereal grasses are what are called *annuals*—that is, they occupy an agricultural year only in arriving at perfection. But as it is the nature of all plants to strive, we may say, to accomplish their fructification, if they are prevented from doing so by being cut down, the stem that is thus cut *will die*, but the root will make a fresh effort, *by throwing out fresh tillers*, to accomplish its mission; and as often as the cutting down is repeated, the same process takes place, till it is too late for the plant to produce an ear, when its powers will lie dormant through the winter. Had the plants of oats sown in June by the experimenter in Huntingdonshire been allowed to ear the same year, which they would have done if not cut down, they would of course have died. But not being allowed to fulfil their mission in that season, they kept on making fresh efforts, by tillering, to do so until the winter stopped the process of vegetation. It ought to be stated that every tiller thrown out after the cutting down was a new plant, under similar conditions to those from a *fresh grain* of oats; and this was the case with those after the third cutting. If they had been taken off from the parent root and planted, they would equally have grown, and perhaps more vigorously than when still attached to it; but this is a conjecture drawn from analogy, having never been tried in the case of oats, that we are aware of.

Secondly, with regard to the transmutation of the oats into barley or rye, we have said we will

endeavor to explain the cause, there being no certain data upon which to base an absolute theory. We are but little acquainted with the relationship of the cereal grasses to each other; we have reason to believe, from historical records, that both wheat, barley, and rye are original plants; that is, being able to trace the history of the two first at least nearly four thousand years backward, we may conclude that they were originally created in the form we see them, adapted at once to the wants of man. But of oats we have no such record in history and their origin is a complete mystery, nor have we any account of their first introduction into this country, or of their being first used as food either for man or beast in other lands. The transmutation referred to, however, seems to throw light upon the subject, and to point out the origin of oats to have been a sport from other grain; and there is a passage in old Gerard's "Herbal" on the subject, which seems to justify this supposition. It is to the following effect: "I think it a very fit thing to add in this place, a rare observation of the transmutation of one species into another in plants, yet none that I have read have observed it. *Several grains of oats did grow in one ear of white wheat*, the which I saw this year 1632, which was found by my very good friend Master John Goodyer, a man second to none in industry in searching of plants, nor in judgment and knowledge of them. This ear of wheat was as large and fair as most are, and about the middle thereof *grew three or four perfect oats*, in all respects, which being hard to be found, I held worthy of setting down for some reasons not to be insisted upon in this place."

The above is, we believe, the first instance of the kind recorded in any work of natural history, and it is rather remarkable that botanists and other naturalists have not noticed it. But the fact is, nearly all of them have not only thrown doubts upon the facts that are from time to time brought forward, but some of the most eminent men in natural history have positively denied the possibility of such transmutations, and have imputed the cases adduced to mistakes of the parties asserting them. It was this incredulity of the *savans* of France and Germany that induced the Royal Agricultural Society of Bavaria to institute a series of experiments in order to ascertain the truth, and the result was a collection of facts that forced conviction upon the minds of all who read them, not only of the possibility, but of the certainty of such transmutations. It is said that the change of oats into barley is a circumstance of frequent occurrence in Norway and Sweden. If such be the case, it would be right for our naturalists to ascertain the truth of it, and to study well the conditions under which they occur; while it is quite possible other principles might be elicited on the subject of the the relationships existing between plants of the same *family*, that the learned with all their philosophy have never dreamed of.

BRIEF NOTES ON THE HISTORY OF
BRITISH AGRICULTURE.*(Continued from Page 17.)*

In 1562 Thomas Tusser published his "Five Hundred Points of Husbandry." This work was intended to embody all the rules of agriculture in short rhymes, for easy remembrance; and although it was written in a very quaint style and in doggerel verse, as a proof of its truthful descriptions and popular merit, it went through several editions. The author mentions Carrots, Turnips, and Cabbages, as having been recently introduced into gardens as "kitchen herbs." In subsequent editions were appended "The Points of Housewifery, united to the Comforts of Husbandry." This is a most amusing work, abounding in quaint verse, embodying the principal duties of housekeeping. The subjoined extract will afford some idea of the character and style of the work, which was printed in black letter:—

"Otes, rie, or else barlee, and wheet that is gray,
Brings land out of comfort, and soone to decay;
One after another, no comfort betweene,
Is crop upon crop, as will quickly be seene.
Still crop upon crop many farmers do take,
And reape little profit for greedinesse sake."

In this way, with much quaintness, the rules of husbandry were given, and few things then known omitted. The truth conveyed in the above quotation, farmers in all countries, (especially such as have been recently settled, Canada among the rest,) have been slow to recognise. The lesson conveyed, however, is of the utmost importance, and essential to every improving system of husbandry.

Tusser was succeeded, after about 30 years, by Barnaby Googe, who makes mention of many writers contemporary with Fitzherbert, whose works have not descended to us. Great stress was usually laid by the olden writers upon the effects of the moon and wind upon the germination and maturity of plants, as well as upon the thrift and fecundity of animals. In Googe's "Book of Husbandry," published in 1577, farmers are told that in manuring the ground, it is necessary to "looke that the wind be westerly, and the moon in the wayne." This advice is repeated in "The Perfect Husbandman," 1657, and it is therein remarked that "this observation (of the moon and wind) helpeth greatly to the bettering of the ground." From the same work we learn that, although there was a general agreement upon the influence of the moon upon vegetation, there were differences of opinion as to the most favourable periods for securing that influence:

"In sowing, some think you must have regard to the moone, and to sow and set in the

increase, and not in the wane. Some again thinke it best from that she is four days old, till she be eighteen;—some after the third, others from the tenth to the twentieth; and best (as they all suppose,) the moone being aloft and not set."

The same author observes, with regard to the planting of trees, that "if the tree be planted in the increase of the moone, it groweth to be very great; but if in the wane, it will be smaller, yet a great deal more lasting."

In those days it was a common belief of the medical profession, that not only the moon, but also the stars (that is the planets) exercised a considerable influence over diseases, and such herbs as were fitted to effect their cure. Hence some plants were assigned to the moon, others to Jupiter, some to Saturn, Mars, &c., and it was believed that these plants should be gathered when their respective astral patrons were in a particular point of the heavens, as on or near this meridian, as their medicinal properties were then in the greatest perfection. We need not wonder, therefore that the farmer and gardener should have looked to similar observances and influences, in conducting their operations. In fact this belief has come down to periods co-incident with our own, and traces of it may yet be discovered among the older inhabitants of the more remote districts of the British Islands, and we dare say in other countries of Europe. We have known ourselves several individuals who observed the age of the moon in sowing seeds, especially in the garden, and likewise in killing pigs. To kill a pig during the wane of the moon, it was believed that the bacon would be inferior, and that the fat or pork would be wasted in the art of boiling; that it would possess properties similar to what we designate on this side the Atlantic beech-mast pork. It is probable that a strict attention to such matters, however fallacious, by our honest fore-fathers, paved the way in some degree for that more patient, varied, and enlarged sphere of observation, which led slowly to the discovery of agricultural principles, upon which alone can be based all sound agricultural practice. It was slowly learned that the chief influences affecting vegetation apart from the condition of the soil, was the warmth and moisture of the surrounding atmosphere; till at length those very useful instruments, the barometer and thermometer became the inmates of almost every farm house.

In the year 1594, Sir Hugh Platt contributed some works to the literature of husbandry. Sir Hugh is described as being the most ingenious husbandman of his age," and as having "held a correspondence with all lovers of agriculture throughout the kingdom." We, therefore, turn to his work, "The Jewell House of Art and Nature," with considerable interest. The motive of the

author for thus undertaking books of instruction upon husbandry, is thus stated:—

"What eie doth not pittie to see the great weakness and decay of our ancient and common mother the earth, which now is grown so aged and stricken in years, and so wounded at the hart with the ploughman's goad, that she beginneth to faint under the husbandman's hands, and groaneth for the decay of her natural balsam. For whose good health and recovery, and for the better comfort of several needy and simple farmers of this land, I have partly undertaken these strange labours, altogether abhorring from my profession, that they might know and practice some farther secrets in their husbandry, for the better manuring of their leane and barren groundes, with some new sorts of marle not yet knowne, or not sufficiently regarded by the best experienced men of our daies."

Sir Hugh afterwards published another work, entitled, "Divers New Sorts of Soyle not yet brought into any Public Use for manuring both of pasture and Arable Ground," in which many interesting particulars can be learnt respecting manuring substances then only imperfectly known to a few. The manures recommended in this work are more numerous than might be anticipated, including salt, street dirt, sullage of streets, clay, fuller's earth, moorish earth, hair, malt-dust, the offal of slaughter-houses, burnt vegetable matter, soap boilers' ashes, fish, some new kinds of marl, and other things; and these are said to have been "not yet brought into any public use," we cannot wonder that the land began "to faint under the husbandman's hand." Indeed there is much in this, as well as some other old authors, from which we in Canada might learn several needful practical lessons; as some of our old cultivated lands are getting into a similar state described by Platt, and manuring substances, although some of them lying close around our homesteads, are almost as much neglected!

In his very remarkable work on Soils, Sir Hugh indulges in some new and amusing speculations on the magical properties of what was considered a sort of *universal salt*, to whose universal, generative, and fructifying influences, both the animal, vegetable, and mineral kingdoms mainly owed the fertility. After much controversy it was conceded that our ordinary salt (chloride of sodium) was identical with this much sought-for and esteemed substance, which was declared to promote not only the growth of plants, but procreation in animals. "Plutarch (it is said) doth witnesse, that ships upon the sea are pestered and poisoned oftentimes, with exceeding store of mice. And some hold opinion, that the females, without any copulation with the males, doe conceive only by licking of salt. And this maketh the fishmongers' wives so wanton, and so beautifull!"

The following extract will afford a pretty full idea of the extraordinary influence attributed to this substance:—

"The secret virtues which lie hid in salt confirm the same. For salt whiteneth all things, it hardeneth all things, it preserveth all things, it giveth favour to all things, it is that masticke which gleweth all things together, it gathereth and knitteth all minerall matters, and of manie thousande pieces it maketh one masse. This salt giveth sounde to all things, and without the sounde no metell will ring in his shirl voyce. Salt maketh man merrie, it whiteneth the flesh, and it giveth beautie to all reasonable creatures, it entertayneth that love and amitie which is betwixt the male and female, through the great vigour and stirring uppe which it provoketh in the engendering members; it helpeth to procreation, it giveth unto creatures their voice, as also unto metalles. * * * * *

And it is salt that maketh all seedes to flourish and growe, and although the number of men is very small which can give any true reason why dungue should doe any goode to arable groundes, but are ledde thereto more from custome than any philosophical reason, nevertheless it is apparent that no dungue, which is layde upon barren groundes, could any way enrich the same, if it were not for the salt which the straw and hay left behind them by their putrefaction."

It is curious to observe how their old idea of the value of salt in agriculture has been revived in modern times. The late Samuel Parkes, author of the popular "Chemical catechism," published about thirty years ago an extended treatise on the use of salt to the agriculturist,—more particularly in reference to the renovation of worn-out soils. Great expectations were raised among the farmers, and when the excise duty was taken off salt and its price consequently much reduced, that article was extensively applied in different forms as a fertilizer; but, in general, with no very marked effect. Hence it soon again got into disuse. The impregnation of the atmosphere with saline matter in Great Britain, and in islands generally, will no doubt account, in some degree, for the feeble influence of salt in agriculture, under such circumstances. But upon continents and places at a great distance from the sea, salt is known to exercise a beneficial influence not only on the soil, but on all domesticated animals. It is also valuable as an ingredient in composts, a fact well known to the ancient Romans. In Canada and a large portion of the American continent it is difficult to conceive how pioneers could get on without it.

To be continued.

The winter meeting of the New York State Agricultural Society takes place at Albany on the 11th instant.

INTERNATIONAL AGRICULTURAL EXHIBITION.

An International Agricultural Exhibition, with the co-operation of the German Agricultural Society, is appointed to be held at Hamburg, Germany, on the 14th to 20th July next. A large and highly influential Committee have been appointed to carry out the undertaking. Messrs. Austin Baldwin & Co., of 72 Broadway, New York, are the Agents of the Committee for this Continent. They are authorized to grant certificates and forms of entry to intending exhibitors. All the prizes are open to general competition. Entries must be made on or before 15th April next. Prizes are offered for Horses, Cattle, Sheep, Pigs, Poultry, Implements and Machinery, and Agricultural Produce of all kinds. The prizes are on a liberal scale ranging for stock from 400 thalers (\$300) to about 20 thalers (\$15). We subjoin the following extracts from the prospectus:

The Committee, in placing before the Public the following List of Prizes to be awarded at the International Agricultural Exhibition, to be held at Hamburg on the 14th, 15th, 16th, 17th, 18th, 19th and 20th of July next, and the Regulations, under which the Entries are to be made, feel a confident hope that their desire to see this Exhibition numerously attended by Exhibitors and others will be very generally responded to.

Hamburg may certainly be considered as the most convenient place on the European Continent for an International Exhibition.

The advantages of this City for the proposed Exhibition in regard to its situation, so accessible from other Agricultural Countries—England, France, Holland, Belgium, Denmark, Sweden, Russia—are obvious. The numerous commercial relations with these Countries and other parts of the Globe, the total exemption from Duty and all and every Customs Regulations have especially favored the Merchants of Hamburg in the interchange of Agricultural Produce and Machinery, and made this city a very important Market for Horses and Cattle.

The Exhibition will therefore be an inducement to Visitors to assemble from all Parts and afford them opportunities of comparing the Productions of various countries, enlarging their ideas and opening new channels for Trade.

The Committee are making exertions to induce all Steam Navigation and Railroad Companies to convey at reduced rates of freight Live Stock, Machinery, Agricultural Implements and Produce, that may be destined for the Exhibition. Their endeavours have not yet terminated, but, so far, every encouragement to this end has been held out to them and they will not fail to make generally known their ar-

rangements, as early as possible, for the information of the Exhibitors.

The Judges to be chosen will be impartial Men, well acquainted with the matters submitted to them for decision, and taken from Gentlemen of all Countries.

The Committee have secured the hearty co-operation of the German Agricultural Society, they are liberally supported by the Hamburg Authorities and other Governments; indeed so many Agricultural Societies in different Countries, especially the Royal Agricultural Society of Great Britain, have evinced such a warm interest in this the first undertaking of the kind in Germany, that the Committee are encouraged to use their most strenuous efforts to render the "Hamburg International Agricultural Meeting of 1863" memorable for its importance.

Hamburg, December, 1862.

IN-AND-IN BREEDING.

[We recommend to the earnest attention of our readers the following communication, which appeared in the *Mark Lane Express*, of Jan. 5th, from the able pen of Mr. Wm. Carr, of Stackhouse, England. It may be read with advantage in connection with an extended extract in our last on *Breeding in the Line*, from an excellent treatise by S. L. Goodale, Secretary of the State of Maine Agricultural Board.]

It is common to hear the in-and-in breeding of animals spoken of as a violation of the law of nature, which must necessarily result in deterioration and degeneracy of the breed. This assumption—which really argues as much ignorance of the definition of a "law of nature" as of the instinct of animal life—seems to be founded on a supposed analogy between the human race and the lower animals. It is argued that because, in the former, close alliances between blood relations are followed by evil consequences, indicating that in their case an organic law of nature has been infringed, that therefore the law must be extended to all organized beings. But we have really no evidence that any such analogy exists. That such a law has no primitive, inherent relation to animal life, derived from the nature of things, is evident from the fact that it was not originally imposed even on man himself, as appears (if we may still be allowed to quote the authority of the Pentateuch) from the records of patriarchal times, and the duration of life attained by the offspring of unions which are now held incestuous. It was instituted at a later period, for reasons manifestly connected with social expediency and domestic morality, the physical or rather mental penalty annexed to its refraction being the means by which, in

the moral government of the world, obedience to such laws is secured. But that no such principle of action has been impressed upon the lower animals may be inferred from the fact that there is not the same necessity for it; that no instinctive sense has been bestowed upon them to protect them from the injurious effects of its infringement (as it is reasonable to suppose would have been the case in any matter affecting the well-being and very existence of the race), and that hence in their natural condition they never conform to any such law. On the contrary, Nature, by whom "all instincts are bestowed on animals *only for their combination and preservation*," has implanted in them an original and still unchanged impulse to indiscriminate commerce between themselves, and not only so, but—with a view probably to the preservation of that harmony and correspondence of form and character so prized by our best breeders—actually dictates the expulsion or going to death of any intruder, even in the same breed, from an alien herd; a fate which, we may add, also befalls any sickly or weakly member of either sex in their own tribe.

Yet, while thus rejecting all external aid, Nature has not left to chance the selection, *from the bulls produced in the herd*, of the sires best fitted to maintain and perpetuate the tribe, but effects it by her own appointed means—wager of battle. Thus Virgil tells us how, even in the half-wild, half-domesticated cattle of his day, the doughtiest scions of the herd, impelled by female allurements, engage in furious contention for supremacy—

"While the fair heifer, balmy breathing, near,
Stands kindling up their rage;"

and how, when the fray is over, the vanquished combatant betakes himself to exile and disgrace, leaving his hated rival lord paramount of the herd. Such conflicts would naturally terminate in favour, not of the largest and most unwieldy animal, but of the one whose superior vigour and activity almost necessarily imply superior perfection of physical structure—some well-proportioned, moderate-sized, firmly-knit, potent-horned hero, whose prowess in the field is the best guarantee for his lustiness in the harem. The victorious usurper, thus installed as sultan of the seraglio, accomplishes his destiny, by becoming—in obedience to that instinct which doubtless has regard to the perfection of the species—the sire of a numerous and vigorous progeny, from cousins of all degrees, from his sisters, his dam, and in due time, perhaps from his own daughters; until, as his physical force declines, and he becomes less fitted for the efficient discharge of his duties, he is challenged by some younger and sturdier rival, and yields his honours to a better than himself, in many cases probably his own son. The same process of selection and rejection still goes on amongst the free

denizens of the Pampas, themselves the descendants of domestic cattle introduced by the Spaniards. It may here be objected that there can be no security that any herd of wild cattle will be impregnated by the most robust and vigorous male, when there are other, perhaps immature or accidentally enfeebled, bulls in the herd; but it is well known that animals in a state of nature, do not couple precociously, and that even if the jealous vigilance of the predominant male were insufficient to guard his rights, amorous instinct teaches the female to prefer and seek out the male possessed of most vigour and beauty, while the males, in their turn, prefer the most vigorous females.

Thus, the analogy which natural animal life bears to the domesticated, affords ground for such strong presumption, as almost to amount to established proof that change of blood is not required so long as the herd can boast of robust and well-proportioned males, not *too* intimately allied; for we may, doubtless err in carrying the system beyond the extent to which it would be likely to occur in nature.

I am aware that the soundness of this analogical deduction has been objected to, on the ground of the difference in the external situation of wild cattle—in their natural food and habits—and in their freedom from restraint in wilds to which they are indigenous. This objection, whatever it may be worth, is at any rate tantamount to an admission of my argument, that the principle we have been considering is *not* a law of nature as regards the bovine race, unless it be contended that Nature has surrounded wild cattle with such external circumstances as will enable them to subvert her laws, or that her laws in relation to animal life are not fixed and invariable, but require, in some instances, the aid of domestication to render them operative! which is absurd.

Nor would the supposed analogy of the human race (even were we, in defiance of all sound reasoning, to admit it) appear, on due examination, to contain any positive force against the practice of the interbreeding of cattle; for the only things we are inquiring about, *form and constitution*, are not impaired by intermarriages within close degrees of consanguinity, provided the parents are corporeally sound, vigorous and well-developed. The Highlands of Scotland afford numerous proofs of this position. The deteriorating influence of alliances between lineal kindred is confined to the *mental* qualities of the children, unless either of the parents is imperfect in frame, rickety in constitution, or predisposed to scrofula, consumption or other physical infirmity, in which case it is only to be expected that similar conditions will manifest themselves in the offspring. Supposing, however, such defect or predisposition to exist in the parent in only a slight degree, it might probably lie dormant for generations, until, as the result of

a union between two direct descendants of the ancestor so predisposed, the objectionable tendency, thus acquiring twofold force, breaks out in the offspring; and herein, I apprehend, lies the true and only danger of the close interbreeding of cattle—not in its tendency to generate mischiefs where they have not previously existed, but to perpetuate them where they do.

It must be conceded that domesticated cattle, even of the *pure races*, from their subjection to artificial and otherwise injudicious treatment, are more liable to defect than the original stock. But this is not a *necessary* consequence of the dependence of cattle on man, especially as regards that compound animal, the shorthorn, whose distinctive excellence can only be maintained by liberal rejections and unremitting care. In the hands of the careful breeder, the improved shorthorn has acquired a vastly improved organization; that part, for instance, on which more especially depends the healthful discharge of all the vital functions, the chest, has acquired a capacity unknown amongst the original races from which the breed has sprung. The only prejudicial change that would *necessarily* take place in cattle from their connection with man would appear to be some diminution of hardihood and activity, owing to their housing and the absence of any demand for exertion. There are, I believe, no other necessary effects of this subjection that would render the conditions of the domesticated and the wild herbivorous animals so dissimilar as to throw a doubt on the validity of any fair reasoning founded upon the analogy between them.

If this be so, then, in the instinctive habits of wild oxen, prompted as they are by unerring wisdom, I venture to think that the proudest esteemer of his own sagacity may learn a lesson both as to the propagation of the breed, and as to the mode of management of his domestic cattle; for animals, to the extent of their instinct, are assuredly wiser in their generation than the children of men.

And first, as to the breeding. It seems a fair deduction, from the modes of action to which wild cattle have been directed, with a view to the propagation of their species, that we may maintain and perpetuate the vigour and uniformity of our herds by breeding from lineal descendants of animals possessing the specified form and character we prize, *provided they are robust and well formed*; though it is doubtless expedient to do so in as remote a degree as we can, *consistently with the selection of the best and most vigorous sires*, lest, by too close breeding, we should intensify and confirm any *unobserved* defects of form or constitution; that to fortify their system against any such acquired or hereditary failings or tendencies which may exist, we should endeavour to maintain them in health by invigor-

ating agencies of exercise, external air, and sunshine; that we should inure our cattle by degrees to the vicissitudes of the seasons—allowing them, perhaps, open sheds in the pastures, to afford that shelter which wild cattle, in the heat of summer and the severity of winter, find in the woods and glens.

We further learn that it is not advisable, when it can be avoided, to use our bulls until they have attained to the maturity of their powers, nor our females until fully and healthily developed. *fortes fortibus creantur*; but feeble animals, or those whose organs are only in the progress of their growth, cannot communicate a perfect vitality, and their offspring must fall below the required standard of growth and strength. We should therefore rigorously reject from our herds as undesirable for breeding purposes, any weakly or delicate animal of either sex: or, if apparently too valuable in point of pedigree to sacrifice, *these* might be crossed with healthy animals of other blood, as it is more probable that by this means the defects of the individual, *if they should chance to have been inherited*, will be effaced or corrected by the soundness of the constitution of the other.

Nature further teaches us that the best mode of insuring the fecundation of our cows is to turn the bull to them in the pasture, more especially in the spring of the year. That this is the season most favourable to conception we may infer from the fact that there is then an effort to reproduction in the whole animal and vegetable world, the amorous impulse pervading every vein and nerve of the brute creation.

" Vere tument terre, et genitalia semina poscunt;
Et venemur certis repetunt armata diebus."

From the migratory habits of wild cattle we may learn that abundance of fresh pasture is important to the health and fecundity of our herds. It is in years of fertility that both human and brute kind increase and multiply, while in years of scarcity reproduction is deficient and the offspring degenerate. Again, nature dictates suckling by the dam, as the best both for her and the calf, especially when the calf can run with its mother, and obtain that exercise which is essential to the digestion of an unlimited supply of milk. When the dam is dried after calving, as is too often the practice in Shorthorn herds, to maintain her condition, the milk is often carried back into the system, causing swellings in the sides and legs, inflammation in the milk tubes, in the udder, and frequently in the substance of the uterus; so that if the animal breed again, it is very doubtful whether her offspring will be healthy.

These are but some amongst numerous lessons that every man may learn from the divine teachings of Nature; but these are sufficient to show us the expediency of adopting, as far as practicable, that method of treatment of our

cattle which is most in harmony with the laws of their constitution.

Under such treatment, we need not hesitate to adopt, for the maintenance of the distinctive type and qualities of our favourite tribe of Shorthorns, a system of in-and-in breeding; and that even from close relationships, where such unions appear otherwise desirable. Nature has no law against it.

It is not thus that the seeds of degeneracy are being sown broadcast in the live-stock of this country, but by a system which involves a violation of almost every law of Nature on which depends the health and well-being of the animal economy—that system of unnatural forcing, on artificial and stimulating food, which it is the apparent object of the Royal Agricultural Society of England and its sister-institutions to encourage. It is notorious that any animal which has been healthily and naturally developed by grazing has but slight chance of successful competition. Its muscular system is too firm and consolidated. The indispensable requisite is an unnatural, and in fact *morbid*, deposition of flabby fat, absurdly styled “quality,” which can only be obtained by that derangement of the functions which results from confinement, and superabundant nutrition. That this functional derangement is almost invariably followed by organic disease is evident from the impaired fertility and early decay of these marvels of the showyard, which are rarely known to reproduce more than once or twice after exhibition. And it is well that it should be so; for it would be as reasonable to expect a healthy crop of potatoes from diseased tubers, as a sound and vigorous generation from animals whose vital organs have been thus ruinously impaired. But this is a subject to which, with your permission, I shall again advert on a future occasion.

SORGHUM OR CHINESE SUGAR CANE.

The cultivation of sorghum, a sugar yielding plant that was introduced into the higher latitudes of this continent only a few years since, appears to be extensively practised in several of the North-western States, and, it would appear, with satisfactory results. Indeed the reports which we have lately seen speak of its success in the most encouraging manner, and it becomes a question worth investigating and testing by experiment, whether it cannot be profitably introduced into the milder districts of Canada. An esteemed correspondent writes to us thus:—

“Some time ago I called attention to the importance of giving encouragement to the cultivation of sorghum or Chinese sugar-cane, and I may now remark that Ohio, which

ordinarily imported 5,000,000 galls. of Syrup from the South, has this year produced 15,000,000 galls. from the Sorghum, thus leaving 10,000,000 for exportation. The article is now one of the staples of the West, and may soon become one of ours. I notice that it is being produced successfully in Nova Scotia, and will be in most of the British Provinces which can raise Indian Corn.

“One principal difficulty in the way of its production is the want of machinery to crush the cane, and simple apparatus to evaporate the sap or to make sugar. To obtain samples or models of these, of the most approved designs, would no doubt come within the range of the Provincial Association, and, if published or exhibited, would be made by our mechanics and induce many to engage in the production of their own syrup or sugar. Such models, I suppose, might be had best in Chicago.”

We observe from some of our American exchanges, that a convention of the growers of the Chinese sugar-cane was recently held at Rockford, Illinois, and was numerously attended by the farmers and others of that State, with a number from Indiana, Iowa, and Wisconsin. Discussions were had in regard to the modes of cultivating the cane, the varieties to be preferred, the modes of manufacturing the syrup, sugar, &c. These discussions, as reported by the *Prairie Farmer*, are very interesting, and show that the production of syrup from the Chinese sugar-cane has already become a very important business in several of the Western States. According to the statements of numerous exhibitors of samples of syrup, it can be produced at a cost of from eight to fifteen cents per gallon.

It would appear that there are several varieties of Sorghum, differing considerably in character, habits, and productiveness. Some would evidently be too tender for our Northern climate, being injured for producing syrup capable of yielding sugar by a temperature at all approaching the freezing point. The convention agreed in recommending three kinds as adapted to Northern cultivation. The Chinese (sorghum) having black seeds, growing in prongs from two to seven inches long; the second or tufted variety, known as African (imphee); and the third, lately introduced, known as the Otaheitan, with long heads, from seven to twelve inches in length, and from one to two in thickness. The *Prairie Farmer* in the first number of the present

year has well executed illustrations of the common sorghum, and the Otaheitan. The latter, as its name denotes, originated in the Society Islands, and is cultivated extensively in the West Indies and South America. It was introduced into Louisiana about the year 1797, but even there it has been found too tender in some seasons, and therefore not to be depended on so far North as Canada.

Our readers will form a good idea of the cost and results of the manufacture from the report read before the Convention by Mr. J. E. Youngman, of Rockford, who appears to have had considerable experience in the business:—

"I put up and operated with during last fall, a Number 1 Sugar Mill and Evaporator, manufactured by the 'Eagle Works Manufacturing Company,' of Chicago, with the following result:

By manufacturing 1870 gallons at 23c.	\$130 10
Gr. Dr.	
Cost of Mill and Evaporator.	\$74 00
Cost of arch and setting mill.	25 90
Wages of two men 45 days, each at \$1.	90 00
Wages of boy and horse, 45 days, at \$1.	45 00
Oil and lights.	1 10
Removing bagasse.	4 40
Wood,	71 10
	—314 50

Net profit (after paying for mill and evaporator), \$115 00

The margin of profit could have been largely increased by using a mill and evaporator of twice the capacity, as it could have been operated with the same number of men by the addition of one horse and a slight additional expense for fuel. From my experience I am well pleased with both mill and evaporator.

The average daily amount made was 41½ gallons; largest amount any one day, 54 gallons, at an expense of 345 cents per gallon. The process used was as follows: I filled the evaporator with juice, and just as it commenced boiling I removed the scum at one operation with a straight-edged board. I then boiled as rapidly as possible (removing all the scum that came to the surface), until it was reduced as low as possible without burning. I then passed it over to the finisher, and filled with fresh juice as before. By this process, and without using any defecating agents except rapid boiling and thorough skimming. I produced syrups of which the following are samples, viz:

No. 1. Mixed cane, sorghum, imphee and broom corn; soil flat and sandy; planted late with a Kuhn & Haines Wheat drill; cut when not fully ripe, carelessly stripped and laid on the ground three weeks before manufacturing, yield 85 gallons per acre.

No. 2. Imphee, not fully ripe, well stripped;

soil light sand, well manured previous year; manufactured immediately after being cut; yield 117 gallons per acre.

No. 3. Imphee, thoroughly ripe, well stripped and trimmed; soil light loam, well manured previous year; yield 110 gallons per acre.

No. 4. Sorghum, quite green and well stripped and trimmed, soil common prairie, dry and rolling; well manured last spring, cane frozen, but crushed as soon as thawed; yield 120 gallons per acre.

No. 5. Sorghum and Imphee, mixed; badly stripped and cut; soil flat clay; no manure for two years; yield 9 gallons per acre.

No. 6. Sorghum, ripe, well stripped; soil common prairie; no manure; yield 112 gallons per acre.

No. 7. Sorghum, ripe, well stripped, tops cut off down to second joint after being brought to the mill; soil loam, receiving wash from barn yard; yield 152 gallons per acre; weight of syrup from which the above samples were taken, 12 lbs. per gallon,

According to the information derived from my customers and my past season's experience in manufacturing, I would recommend a light sandy soil, free from surface water, well manured the previous year, plowed deeply in the fall, again stirred in the spring immediately before planting, and the seed drilled in with a wheat drill. I consider the Sorghum, if fully matured, as preferable to any other variety raised in this vicinity. Cane, to make good syrup, should be stripped when fully ripe; it should be cut above the second joint, and the top should be cut down to the second joint; it should lie upon the ground until wilted, then bind in bundles of convenient size for handling, and shock up in the same way as corn. If covered to protect from the rain and frost, it can be kept until winter, and will make as good, if not a better article of syrup than when freshly cut."

The committee appointed to examine syrup and sugar, made a report from which we take the following paragraph:—

"From the good samples they set aside twenty-seven as ranking first among those exhibited; as a matter of course there are among this lot, some of superior excellence and purity, but they are so numerous that your committee concluded to designate no one as worthy the claim of superior excellence. Certain it is that, judging from the samples, great advancements have been made within the past year in the manufacture of syrups; and with the necessary care and attention to the subject of manufacture, as brought before the convention, will enable almost any one to manufacture a very palatable article. How far it will be practicable to manufacture for sale and export, every one should be his own judge."

The committee make favorable mention of several samples of sugar that were exhibited.

The committee on seed say:—"In the selection of seed, special regard should be had to the question of its purity or freedom from amalgamation with other plants [especially with broom-corn] which tend to its deterioration. The production from the Yellow imphee, or African cane, has more frequently resulted in crystalization than any other. This variety is also greatly desired on account of its habit of early maturing. Of the different kinds of Chinese cane known in this country, the committee infer from all the information before them, that neither the smallest, earliest varieties, nor yet the largest and later sorts, but a medium between these two extremes, is most desirable."

How far this plant is suited to Canada remains to be seen. The success which is said to have attended its cultivation in Wisconsin and Iowa, is, to say the least, hopeful. That it will produce with us abundance of syrup, when properly managed, the very few small experiments that have come to our knowledge seem to indicate. But whether a sufficient amount of granulated syrup can be obtained to compete successfully with the imported article from the sugar-cane remains to be shown. As an article of fodder, whether in a green or dried state, the Sorghum must be valuable, and to extend the range of our crops by the introduction of new varieties cannot be otherwise than beneficial. We trust, therefore, that the Board of Agriculture will give this matter consideration, and we shall be happy to hear of the results that have been obtained by the labours and experience of individuals.

THE WHEAT MIDGE.

In that excellent little manual,—the *Annual Register of Rural Affairs* for 1863, which should be in the hands of every inquiring and progressive farmer, we take the following from a valuable paper on insects, by Dr. Fitch, the well-known Entomologist of the New York Agricultural Society:

The Wheat Midge (*Cecidomyia tritici*, Kirby,) the insect which in this country is commonly but most improperly termed the "weevil," is by far the most important depredator upon our grain. It has been known in Great Britain for more than a hundred years, and has occasionally quite injurious to the wheat crops of that coun-

try. Within a few years past it has also attracted observation in the north of France, in consequence of the damage it was occasioning to the wheat crops there. In these its native haunts, wherever it appears, it is accompanied by vast numbers of minute black flies, resembling small ants, which are its parasitic destroyers. One of these parasites deposits its eggs in the larvæ, another in the eggs of the midge, causing them to perish, and hereby this insect is constantly repressed and restrained from multiplying, and is speedily quelled whenever it chances to become numerous.

It was introduced upon this continent, probably, in unthrashed wheat brought to the port of Quebec, and begun to attract public notice from its extreme destructiveness to the wheat crop in the northwestern part of Vermont, in the year 1828. From thence it has spread itself over all the free States and Canada, as far west as into Michigan and Indiana, everywhere laying the wheat under contribution for its support, and rendering this crop so uncertain that in all the older parts of the country it has ceased to be a staple product.

This insect is a very small two-winged fly about a third the size of a musketo, which it resembles in appearance. It is of a bright lemon-yellow color, with clear glassy wings. * * * These flies come out from the ground each year in the fields where wheat was grown the year before. The sexes pair immediately, and the females then fly away by night in search of the new wheat fields, in which they all soon become gathered. It is a little before the middle of June that they begin to appear, and the females continue more than a month, occupied in placing their eggs between the chaffs of the wheat ears. They are most active in a moist atmosphere, and cannot endure a dry one. Hence they are only seen at their work on the wheat ears in the night time, when the dews are falling, and on cloudy days. And if the last half of June be wet and showery, this insect is most numerous and destructive: but if it be remarkable dry, the wheat that year escapes from injury, the insects withdrawing from it, probably to the grass of the moist lowland meadows and the margins of streams, in which to rear its young, to return, as they do, into the wheat of the next year.

The eggs hatch minute footless worms or maggots, which soon acquire a bright orange-yellow color. These place themselves upon the soft young grains. They abstract the milky juice from the grains, whereby the latter become shrunk and dwarfish. The worms get their growth in three or four weeks, when they are slightly less than a tenth of an inch long. * * *

It is when the straw is wet with rain that these worms, having got their growth, leave the wheat heads and crawl down to the ground, where, slightly under their surface, they inclose themselves in minute cocoons, scarcely the size of

mustard seeds, in which they remain through the autumn and winter, and till ready to change into flies the following June. A portion of the worms, however, are still remaining in the wheat heads at the time of harvest. These are carried into the barn, where, as no moisture gets to them to quicken them into activity, they lie dormant until the grain is thrashed and cleaned, when they drop with other foul matters into the box which gathers the screenings of the fanning mill.

With respect to the remedies for this insect, every farmer knows that by late sowing he can prevent his wheat from being headed and in bloom till the season for the midge to deposit its eggs therein has nearly or quite passed by; yet, in thus attempting to raise wheat in any other except the best period of the year for its growth, he is liable to obtain only an inferior crop. It is in our power to do much towards diminishing the numbers of this insect. Whenever the screenings of the fanning mill abound with the yellow larvæ of the midge, they should be burned, or fed under cover to the poultry or swine: they should never be emptied out doors to mature, as they there will, into a swarm of flies, to live at the expense of the wheat the following summer. And those larvæ which leave the wheat heads before harvest, and remain in the fields, tightly wound up and fettered in their cocoons, slightly under the ground, may be destroyed, it is altogether probable, by turning the wheat stubble under with the plough, thus burying them to such a depth that in their efforts to work their way up to the surface, when they break out from their cocoons the following June, they will become exhausted and perish. Thus every man may destroy all these insects which are generated in his own wheat, and hereby materially lessen their ravages on his lands. But unfortunately they breed also in grass, or at least in some situation other than in the wheat, from whence their ranks will always be liable to be replenished.

In America we have now had thirty years' experience with this insect. We have become well acquainted with its history, its transformations and habits. The best remedies for it which we are able to advise and practice, are but partly efficacious. It continues to be as numerous and destructive now as it has been at any previous period. By diminishing the yield of wheat crops, it is occasioning a loss, to the State of New York alone, of some millions of dollars annually. And this loss will continue until by the hand of man, the parasite destroyers of this insect become introduced into this country, when it will disappear, in the same manner that its predecessor and compeer in destructiveness, the Hessian fly, has disappeared, and almost ceased to be felt as an evil.

Cattle require liberal feeding and good shelter this month.

NATIVE CATTLE.

[We take the following interesting article from the *New York Argus*, a weekly leading paper in the Democratic interest, ably edited and very extensively circulated. Its agricultural department has often original articles of great interest. The present one is from the pen of the HON. WINSLOW C. WATSON, of the State of New York.—Eds.]

A persistent and often somewhat animated discussion has long prevailed in reference to the comparative merits of the various breeds of imported Blood Cattle. These controversies, while they seem only to result in concessions, that each class possesses peculiar and distinctive excellencies, which in that particular renders it superior to all others, tend to divert attention from another family of animals worthy of more consideration than they receive. It is not our present purpose to trace the characteristics of the Thorough-breeds, but to suggest some views in connection with the history and qualities of the class we have referred to, which is designated by the general description of "Native Stock."

Our remarks will be stimulated by no feeling of hostility towards the imported breeds, for our farmer's eye always delights in viewing the beautiful Devon, the symmetrical Short-horn, or the stately Hereford. We rejoice to see them introduced and impressing their beauties or fine proportions upon our common stock. We have no desire to depreciate, but will accord to these magnificent animals all the pre-eminence their advocates may justly claim for them.

The observation of years has confirmed an early impression, that our common American cattle possess properties not excelled by any foreign stock for all practical dairy purposes. These qualities, in real utility, are more important and desirable than mere comeliness of figure and appearance or majestic proportions. A glance at the origin of the Neat Cattle which predominate in this country, and constitute our "Native Stock," will, we think, disclose ample reasons for their possessing this superiority, and from the opinion that they form a basis, by judicious breeding, for immense progress in the improvement of their excellent qualities.

In judging of the merits of these cattle, and comparing them with imported stock, we should regard the facts that they have for generations been subjected to the hard usage and scanty fare which has too generally marked the management of the American farmer, while their foreign rivals of every name have been pampered by the highest care, and very essentially formed by appliances.

The term "Native Cattle," in the popular language of this country, is exceedingly indefinite and very broad. They necessarily have had their origin from animals imported since the first settlement of the continent, from nearly every European stock. In the commo

acceptation, and in that connection we use the term, "Natives" are referred to, in contradistinction to the modern thorough breeds.—Sprung from such diversified sources, and continued by no regard to systematic breeding, it is obvious that our common cattle could have received no distinguishing marks of color or form. The good as well as bad qualities of the original stock, by this system of promiscuous breeding, would undoubtedly accumulate in the descendants, but without impressing on them any marked or predominating quality or aspect.

We need not argue the obvious assumption, that the immigrants who introduced the earliest stock, would have selected for the purpose animals of the choicest properties. The sagacity of these men, for which they were so remarkable, must have suggested the expediency of selecting the most valuable animals for transportation. The expense of conveying an animal across the Atlantic was very great, and could only be remunerated by the choice of stock for the purpose of the greatest excellence. These importations formed the foundation of our native cattle, and gathered as we shall see, from various lands, they undoubtedly combined the most desirable qualities of the cattle of every country of Europe.

The first importation of neat cattle into New England was made by Edward Winslow, who introduced several head into the Plymouth colony in the year 1623. The other cattle introduced into Massachusetts for a series of years were brought from England. The beautiful dark red, which formerly was such a characteristic trait with the prevalent breeds of New England indicates that the stock which formed the original basis of these "Natives" imparted to them a high infusion of Devon blood. The Devons were an ancient and original family of British cattle, and were widely diffused in England, when the Short Horns had not been created as a distinct breed. This fact enhances the probability that the Devon stripe formed a large foundation of the original stock of New England.

In 1631 cattle were introduced from Denmark into the colony of New Hampshire. These cattle were distinguished by a peculiar yellow color. They existed as late as 1820, in some sections of that state, and it was believed in nearly an original purity of blood. A breed of yellow cattle, which probably originated from this source, remarkable for their valuable qualities, and particularly active and vigorous under the yoke, were widely spread in New England in the first quarter of the present century, but have now, it is presumed, become extinct.

The French at a more remote period had introduced neat stock from France into their colonial possessions. The Swedes at about the same time with the importation into New England, imported cattle into Delaware from Sweden, and the Dutch into New York from Holland. A breed of hornless cattle, marked with all the peculiar traits of the Galloway and highly esteemed for their milking properties, was very recently prevalent in New

England. These unquestionably were descended from individual importations of that valuable family of milkers. Stock was largely imported into the Southern States at an early epoch, from France, England and Spain. Choice cows were habitually procured in Europe to supply our ships with milk on their voyages, and were exchanged for others on their arrival in this country. It is perfectly authenticated that these animals were important acquisitions to the milking qualities of our stock.

These various and dissimilar breeds have been preserved in certain districts with considerable distinctiveness, but in the lapse of two centuries, by the intercourse of business and the mingling of the population, they have become gradually combined, and in the amalgamation form the constituents of our native stock. The mixture by indiscriminate breeding of such diversified blood for a series of generations, has from necessity produced a stock without affinity to any distinct breed now existing in Europe.

If the origin and history of our native animals, which we have thus sketched, be correct, it can require neither much argument or illustration to prove that stock springing from materials such as originated our native animals, must possess elements of the highest excellence. We may advert to another circumstance as affording evidence of the natural superiority of this stock in a special department, but which is in truth the primary requirement for the dairy. We have designed to present this subject in reference to the capacity of the various breeds for yielding milk, and not as to their adaptation to the shambles or yoke. The cows originally imported were selected to supply milk as an article of food for famishing colonies, and animals valuable for their milking properties would naturally have been preferred. To some of all these circumstances of origin combined, we may ascribe the extraordinary productiveness of individual native cows in their yield of milk, and the value, with appropriate care and feed, of the native stock generally for the purposes of the dairy. We think the position will not be questioned, that a herd of native cows, receiving the same treatment which imported animals usually enjoy, are equal, if not superior, in the clear remuneration to the keeper they afford, to any foreign stock.

Experience and facts, the most reliable tests in practical agricultural problems, vindicate by actual results the correctness of this theory. Numerous cases of individual, native stock, such as the Oakes cow of Massachusetts, have exhibited unequalled capacity as milkers.—Many of our largest and most productive dairies are composed exclusively of native stock. The experiment of Col. Pratt of this State, so eminently successful as to be cited in the synopsis of the census returns of 1860, in which he used in his vast dairy an entire herd of native cows, proves that his singular practical judgment did not err, in giving our native stock the preference. We refer to these instances, not that

they are isolated, but for their illustration of a clearly established proposition.

We have no purpose by the suggestions we have presented to impede the introduction, or to discredit the utility of superior exotic animals, but on the contrary we concede that they may be beneficially used to supply by the influence of some specific quality of size, contour, beauty, or other distinctive property, prevailing defects in individuals or families of native stock.

We have attempted to impress on the mind of the American breeder a conviction of the important truth, that our country embraces a stock which may now be termed indigenous, equal to any foreign breeds for all the objects of the dairy. No land contains the basis for a race of animals better adapted to improvement and upon which the application of care in treatment and skill, and science in breeding, will be attended by more favorable or remunerative results.

Why should not the American farmer emulate the triumphs of European science, and by perseverance, attention, and skill, elevate the standard of our native stock, until it may challenge, in the estimation of the world, competition with the choicest thorough breeds of England?

VALUE OF PEDIGREES.

Analyses of pedigrees are necessarily imperfect. We deal with numbers, not with power. The numerical proportion of crosses can be accurately ascertained; the potential proportion in each cross, and the variation of power in each, eludes observation. We can discover how much of this blood and how much of that a pedigree contains, but all attempts to detect the comparative influence of the several ingredients are successfully baffled. Conjecture supplies no determinate information; indeed, it supplies no information at all; and conjecture will ascribe superiority of potency to one sort of blood or another, according to the bias of individual taste. We can only, perhaps, be quite certain about a predominance of power when we are quite certain of a very decided predominance of any one element. A mere equality of numbers by no means denotes an equality of power, as in the case either of a short-horn bull put to a Highland cow, or a Highland Bull crossed with a short-horn cow. In both these cases the numerical portion is half and half, though the potential proportion is in a different ratio. But calculations, because they fall short of deciding the relative momentum of every constituent part, are not therefore of no value. They are of very great importance notwithstanding; for they bring a man acquainted with the general composition of an animal, and at least afford him an opportunity of seeing how *much* there is of the blood he likes, of the blood he hates, and of the blood about which he is indifferent. The grand vital truth of pedigrees lies, like all truth, *underneath*—as the ancients told us, at the bottom

of the well; and if we want it, we must *go down* for it. Impressions projected from the *surface* are usually delusive, for they are faithful only in part. The incompetency of the exterior of a pedigree to disclose the real character of a pedigree, in all the fulness of its wealth, seems to be admitted in the practice so much resorted to at present in private catalogues, of appending copious explanatory notes to the various crosses which compose the formula. In these notes something is told which the top lair does not reveal. How complicated a piece of complexity does a pedigree look to one who has descended beneath the superficial appearances, penetrated deeply the substrata and pursued his course of investigation on every side. To such a man a good deal more than eight or ten lines and a few bracketed references to a book of record is presented. He sees what others cannot see; for he knows what others do not know. Let us suppose a pedigree of 20 crosses. The four most recent crosses, we will assume, are Bates crosses; the other sixteen consist of miscellaneous blood. The animal to which this imaginary pedigree belongs possesses fifteen-sixteenths of Bates blood, through the four crosses alluded to, whilst the remaining sixteen crosses make only one-sixteenth. Are these sixteen crosses, then, influential, or, if influential, in what degree are they so? They are influential, because they have contributed to form the animal before us. Without any one of these crosses, or any portion of them, the animal would not have been what she is; could not, by any possibility, have been the same animal: but what precise degree or quantity of power is to be referred to each individual cross of these sixteen crosses is, of course, utterly beyond discovery. All the sixteen crosses have been necessary antecedents of the animal which stands before us, of which we say, and say with truth, that by virtue of the four most recent crosses she has fifteen-sixteenths of Bates blood in her. It would, however, seem as if the earlier or remote ingredients in a pedigree often did more than exercise a general effect, and were not without positive present and practical influence—something resembling that which the costly experiments of Sir Joshua Reynolds in his decomposition of some of the works of the old masters, discovered to belong to the initial and hidden coats or lairs of colouring applied by them. It would seem as if the power of certain crosses of ancient data came up and through the others, making themselves felt even after years of abeyance. But how long the earlier elements signified in a pedigree continue their influence, and to what extent they are influential; or whether they cease to be influential, so far as individual characteristics are concerned, and at what particular point they cease; are questions not only quite incapable of satisfactory solution, but of little consequence, so long as the animals resulting from them exhibit the unequivocal marks of high and careful breeding.

This must be evident, that every animal contains within it the whole of its antecedents; nor is it less manifest that certain combinations and intercommunications of blood have the effect of very speedily overpowering the original parentage, unless belonging to some distinct and incongruous species. In the case of animals bred by one who has uniformly adhered to a favourite strain of blood there is great peculiarity. Even without exhibiting incestuous alliances, the pedigrees of such animals, if carefully searched, would show so many *repetitions* of early sires, so much and such intricate complications of affinities, that very express personal resemblances to remote ancestors, so far from exciting surprise, might be confidently expressed. The face of a pedigree, as we have frequently observed, affords no adequate notion of what the pedigree really is—presents, in fact, a very imperfect idea of the frequency of the recurrence of certain ingredients, whether valuable or worthless. Let us give an instance. It shall be the Herd Book pedigree of one of the noblest short-horn sires of the day:—

Mr. Raine's Earl of Derby (12,810).

Got by Gay Lad (12,922),
dam by The Colonel (5428),
gd by Guardian (3947),
ggd by Magnum Bonum (2243),
gggd by Young Rockingham (2547),
ggggd by North Star (460),
gggggd by Denton (198),
ggggggd by Ladrone (353),
gggggggd by Henry (301).

The reader who is but a novice in herd book lore can hardly fail to perceive the pedigree of this magnificent bull to be a pedigree of great value; but not many, probably of more advanced students are exactly aware of the amount of Magnum Bonum blood, for instance, which it sets forth, if minutely examined. Let us see. The name of Magnum Bonum occurs once, and only once, in the direct line of Earl of Derby's pedigree, his granddam having been a daughter of that bull. Only one-sixteenth of Earl of Derby is due, through the direct line, to Magnum Bonum. But Earl of Derby's sire, Gay Lad, was a grandson of Magnum Bonum. His dam's sire, The Colonel, was a son of Magnum Bonum. His grand-dam's sire, Guardian, was a son of Magnum Bonum. Earl of Derby is therefore four times descended from Magnum Bonum; and the proportion of Magnum Bonum in the blood of Earl of Derby is three-eighths, or one-eighth short of a half. We are reminded of a still more apposite illustration. The following is the pedigree of Filbert, a young heifer bred by the writer of these lines, and now the property of a gentleman in Staffordshire:

Got by Royal Windsor (18,784),
dam by Lord Belleville (14,804),
gd by Magistrate (10,487),
ggd by The Colonel (5428),
gggd by Paganini (2405),
ggggd by Rob Roy (557),
gggggd by Wellington (678), &c.

Rob Roy (the sixth bull mentioned here) by Wright's Remus, and out of Lady Jane by Comet, was the grandsire of Magnum Bonum, and his name occurs *once* on the face of Filbert's pedigree. But Filbert's sire is three times descended from Rob Roy; and Filbert's dam (bred by Mr. Joseph Dent, of Neasham) ten times; so that Filbert has Rob Roy thirteen times in her genealogy. We might multiply illustrations of this sort, for they are very numerous; in the most carefully conducted herds, very numerous. Many of the Warlaby pedigrees; if thoughtfully scrutinized with respect to the present subject will repay the inquisitive student for the time and attention he may bestow upon them. They abound in repetitions, in no sense objectionable, of the finest old blood; and disclose, when questioned thus, a richness and wealth of contents but little suspected by the generality of readers. Let us take, for instance, and almost at random, the pedigree of Royal Bride (H.B. xiv. 684); and let us take it in reference chiefly to the blood of Pilot (496).

Got by Crown Prince (10,087),
dam Bride Elect by Vanguard (10,994),
gd Bianca by Leonard (4210),
ggd Bagatelle by Buckingham (3239),
gggd by Raspberry (4875),
ggggd by Young Matchem (4422),
gggggd by Young Alexander (2977),
ggggggd by Pilot (496),
gggggggd by The Lame Bull (359),
ggggggggd by Easby (232),
gggggggggd by Suwarrow (636).

The history of Royal Bride's pedigree reveals no close in-breeding; and whilst it shows Mr. Booth to have pursued the principle of general adherence to one strain, it also discovers several instances of the introduction of fresh blood into the Warlaby herd. Yet it is a curious fact, that although the name of Pilot occurs but *once* in the direct line of this pedigree, Royal Bride is *forty-one* times descended from that bull; twenty-one times through her sire Crown Prince, and twenty times through her dam Bride Elect. The reader can see, from the foregoing examples, without having recourse to the hypothesis of accidental coincidences, how animals bred in this way may be expected to reproduce the personal characteristics of their ancestors.—*Bell's Messenger*.

GROOMING AND FEEDING HORSES.

A few words now about grooming and management. Every horse should be thoroughly cleaned each day. The bedding instead of being thrown under the manger to fill his food, eyes, and lungs with ammonia, should be thrown behind him or out of doors to air. His manger should be kept clean, and once a week washed with salt and water and salt left in it. One night in each week, he should have a warm bran mash—eight quarts—generally given on Satur-

day night, as it is somewhat loosening and weakening, and the horse is presumed to be idle on Sunday. Oats are by far the best food, and ground oats, wet with water, is better than the whole dry grain. Cut hay is a great saving, and moistened and sprinkled with ground oats, forms *the best of food*. The hull of the oats is hard and often unmastered, and passes undigested through the system, thus taking away instead of imparting strength and nutrition. For medium sized horses, with moderate work, nine to twelve quarts of oats per day and 14 lbs. of hay are ample. For large draft horses, 18 quarts oats and 16 lbs. hay. Food consisting of one-third corn ground with two-thirds oats, forms strong, hearty *winter* food for work or coach horses. But corn is unfit for road or fast horses—it is too heating. Good beds and good grooming are as important as good feeding. Horses, like men, want good, dry, warm, clean beds. In grooming, tie your horse so he can't bite his manger and thus learn to crib bite; and if you find your groom currying and tormenting the poor animal when he is tied, so he is uneasy and restless, use your stable broom over the groom's back—it is an excellent instructor to teach him to be very gentle. Let the currycomb be very moderately used on the body to loosen up the scurf and dirt, but never permit one near the mane and tail. *Rely mainly on the brush* and rough cloth for cleaning. Banish combs from your stable. They tear out more hair in a day than will grow in a month, and they ruin all the manes and tails that are ruined. The tail should be washed with castile soap and water once every week, and *brushed with a wet brush every day in the year*, holding up the bone of the tail and brushing the hair from you. Half an hour is enough for a groom, to one horse, but one hour time at the outside, ample to be very complete. City horses on dry floors should have cow manure put into their feet once a week, to draw out fever and keep hoofs growing. It should be put in over night and allowed to wear out itself. To conclude, always be gentle about your horses's body, especially his head—"more haste less speed" is peculiarly applicable to grooming and breaking. Use whips as little as possible—use your reason and exercise patience and kindness, and instil by precept and example the same useful lessons in those untutored creatures denominated grooms—and if you cannot inculcate wholesome truths into their heads, you can ameliorate the condition of that much abused animal, the horse, by occasionally exemplifying the power of their own treatment on themselves. —H. L. S. in *Country Gentleman*.

KEEPING HORSES IN WINTER.

The first thing of importance is a good stable, which should be warm, light, dry and well ventilated. Each of these conditions must be observed to insure the health and comfort of the horse. The cold winds must not be permitted

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to blow upon him, nor damp, foul air fill the stable. Let a plentiful supply of pure air and light be admitted through windows or blinds. The stalls should be 14 feet long and 5½ wide; mangers for hay are preferable to racks, as the horses are less liable to waste their hay by getting it under their feet. The manger should be about 3½ feet high next to the stall, and 6 inches higher in front; about 20 inches wide at the top 14 at the bottom, and extend to within 16 inches of the floor, which will leave room beneath for the bedding. The top piece on both sides of the manger should be 2 inches thick, of hard wood, to prevent the horse from gnawing. The feed box should be in the right hand end of the manger, and made of two-inch hardwood plank; 10 inches square is a good size. The partitions between the stalls should be about 8 feet long, and it is best to have them so high in front that the horses cannot get their heads together.

When the horse is idle, two quarts of oats given morning and evening, with plenty of good hay, will keep him in good condition. If corn is fed on the ear, two or three common-sized ears will answer the same purpose, or three quarts of corn and cob meal per day. If at light or medium work, four quarts of oats, six ears of corn, or three quarts of corn and cob meal, should be given three times a day, with all the hay he will eat. If at hard labor, six quarts of oats, ten ears of corn or four quarts of corn and cob meal, will be required. Whole corn is not economical food for horses, as much of it will pass through undigested; but as it is used by many farmers, I give directions for feeding it. In feeding new corn, care must be taken not to give too much at first, as it is very liable to give horses the colic. Many, perhaps the majority of farm horses, in our part of the country, are kept upon much less grain than this, but they do not look as we desire our horses should—fat, sleek and comfortable, and always ready for service. Carrots are very good for horses, and instead of feeding grain alone, an equal quantity of carrots may be substituted once a day with great benefit. Roots have a tendency to keep the bowels loose, and a horse will thrive better if carrots can form a portion of his food. An occasional "bran smash" is very good for the same purpose. To make it, scald four to six quarts of shorts, add a little salt, and feed after it has cooled sufficiently. Horses should be watered regularly, at least three times per day; our rule is, water after eating in the morning, before eating at noon, and before eating at night.

The above useful remarks are taken from the *American Agriculturist*. In reference to the important question of ventilation it has been said, that the great mortality occurring amongst the horses of the French cavalry have been diminished more than one-half by increasing the amount of air supplied to the stables, no other change in the management having occurred.

At the end of the Italian war, 10,000 cavalry were left with no stabling but mere temporary sheds; but the mortality was quite insignificant, and not a single case of glanders occurred. The French Government are now trying some experiments with respect to the results of the exposure of horses to even currents of air, some of the results having proved of a most favorable kind. As might be expected, the effects of the improved ventilation of stables have been still more fully exhibited with respect to sick and wounded horses.

Prof. SIMONDS, the distinguished veterinarian, in a report to the Royal Agricultural Society on the "Rinderpest," and other epidemics affecting the cattle of Europe, states that he found pleuro pneumonia very prevalent in some localities, and he was not surprised at this when he saw the condition in which the stock were kept, particularly in the vicinity of Rotterdam, in Holland.

He adds, "The cattle are often crowded into stables so thick, that to pass between them is almost impossible. The form and size of the buildings will frequently only allow of a passage along the centre where the heads of the animals nearly meet over their feeding troughs, while the height of the stable is insufficient to allow a person to stand upright therein."

In many of the sheds or stables there are no windows for the admission of light or air. The heat is almost suffocating, and the stench abominable. In such unwholesome, pest-breeding places as these are cattle kept, to the number of forty or fifty, together, and fed on the waste of distilleries."

CUTTING FODDER FOR STOCK.

Pinching winter is now upon us, and the stock of hay in most parts of the country is but scanty. Roots too in many localities are anything but abundant. The farmer will therefore have to use his utmost ingenuity in making the most of what provender he has got in order to carry his stock through the winter in a healthy and thriving state. Now the cutting and mixing of hay, straw, corn stalks, &c., long experience has shown to be economical, more so by far than those who have not practised it generally imagine. It facilitates mastication and digestion: and as the different materials are reduced and mixed, the less nutritive are taken by the animal with the more valuable, and waste is thereby prevented. Hard worked horses are particularly benefitted by using cut food. The following remarks on the subject from the *N. E. Farmer*, are well deserving notice:—

We are decidedly in favor of it; not from any precise and accurate experiments by weight and

measure, but from a close and interested observation of the spending of cut and uncut fodder, and from its effects upon the stock that consumed it, through a period of several years. The difference in feeding out a certain quantity of hay, cut and mixed with a given amount of grain, and feeding out the same amount of hay whole, with the same amount of grain, has been too great with us, to admit of a single doubt of the profitableness of cutting the fodder. Especially is this the case with corn fodder. Fed whole, the cattle will select the husks and leaves, and reject the stems, wherever the crop is a stout one—but when cut, mixed with a small quantity of grain, moistened, and allowed to stand twelve hours, cattle will eat every particle of it, excepting, perhaps, some of the rank and hard points of the stems.

In most hay fed to cattle some portion of it will be less attractive than the rest, and where cattle are well fed, they will leave the poorest, which is quite apt to get under them as litter, or to be at once thrown through the scuttle to the manure heap, or at best, scattered over the yard to be pitched over again or trodden under foot. This is the case with much hay that is too valuable to go to such purposes. When hay is cut, this loss is entirely prevented, and it is rare to find anything left but bits of stick or the stems of rank weeds, if such were on the hay.

That the cutting adds anything to the amount of nutriment contained in the fodder, we do not argue—nor does it to the potato we eat, and yet we find it vastly more convenient in a smaller form. It may be urged that cattle are provided with the means of cutting long fodder, and therefore do not need it in a comminuted form—but the buffalo, in his native ranges eats no tall grasses and rank herbage if he can avoid it, but traverses over vast plains to graze upon the short, tender grass, thereby showing a decided preference for his food in smaller dimensions than is afforded in corn fodder, or in hay that affords two or three tons to the acre.

We have cut the fodder for a stock of fifteen to twenty head of cattle, watching the effect with interest, and come to the conclusion that the process is an economical one—but tested by actual weight and measurement, this apparent advantage might not be sustained, after all.

THE HORSE CLIPPING MACHINE.

Among the many ingenious contrivances to be seen at the Smithfield Cattle Show, in the New Agricultural Hall, will be a novel piece of mechanism invented by two French gentlemen, Messrs. DeBanat, which bids fair to outstep even the sensation cow-milking machine so much wondered at in the Great Exhibition at Kensington. This is another instance of the great labour-saving principle which seems to tax the brains of all inventors now a-days realised in one of its happiest and most successful applications.

The instrument itself is as nearly akin to a lawn mower as anything can be. It is precisely the same cutting by a revolving cylinder, upon which are fixed seven spiral knives, acting against a fixed blade, and thus forming a scissor. A steel comb is placed underneath, to protect the skin of the animal, and ensure an even clipping of the hair. The operator holds this instrument with both hands, and moves across-grain over the whole surface, like a smoothing iron. The legs only, together with the lower part of the chest and the head, must still be clipped with scissors; but this may be done by hand whilst the other parts are being operated upon by the machine. The inventors affirm that two horses may thus be completed in five hours, requiring only the labour of three men—the operator with the machine, the clipper with the scissors, and a labourer to work the machine.

Thus far, the principle of this new instrument can easily be understood by all who are acquainted with lawn mowers; and although this novel and, at the same time, most useful application of the principle of rotary cutting may not be very strikingly new, the transmission of the rotary motion is in itself a most wonderful effort of mechanical skill, and we believe is quite a new discovery in mechanics. The motive power is nearly the same as in a sewing machine. A man holds the handle of the wheel in his hand, and moves it with his foot. The motion is transmitted through a flexible chain as pliant as a rope, formed of articulated links and steel thread, so that the operator can vary his movements as he lists, without being hindered by the least rigidity in the transmission medium. The motive power and its transmission through the chain are so perfect that the cutting cylinder gives 5,000 revolutions in a minute.

Hitherto in England clipping has been practised, so far as we know only upon horses. In France it appears that experiments have been made by a celebrated grazier, with a view of testing the effects of clipping upon feeding oxen. Twelve oxen were selected, six of which were clipped. The clipped lot weighed at the commencement of the experiment 52 cwt.; the unclipped lot weighed 56 cwt. 10 lbs. The two lots were fed alike, and at the end of two months the clipped lot weighed 65 cwt. 10 lbs.; the unclipped lot only 61 cwt. 1 qr. Thus the increase per head, in the first lot, had been upwards of 2 cwt., and for the second only about 96 lbs. We quote this report from a paper on the subject published in a French periodical belonging to the Society for the protection of Animals; but we cannot reproduce at length their respective experiments, which extended over a period of six months, from the glaring and most unaccountable inaccuracies in the figures given, scarcely one of which proves correct. The idea, however, is worth noticing, as it is quite consonant with the teachings of physiology on the action exercised by the skin on the digestive organs, and especially on the combustion of the

carbonaceous and fat producing elements of food in the lungs, to suppose that fat will more readily accumulate in the tissues of an animal where insensible perspiration is not impeded by a thick fur, than in one whose skin is profusely covered with hair. Long hair in winter is a provision of nature to protect animals living in the wild state from the injurious effects of cold; but in the domestic life, and especially within warm and comfortable feeding boxes, this winter garment is useless, and evidently pernicious.—*Mark Lane Express.*

DOGS VS. SHEEP.

Tha depredations committed by dogs among sheep are unhappily too well-known everywhere. The losses both in the States and in Canada from this cause are in the aggregate appallingly great. Mr. Dyer, a Veterinary Surgeon at Waterford, in Ireland, recommends that dogs should be emasculated, as a means of preventing or at least greatly mitigating the evil. In writing to the *Mail*, he observes:

I dare say some of your readers will smile at the idea of subjecting dogs to this supposed-to-be-painful operation, and will, doubtless, insinuate that it would not prove effectual. If we consider for a moment the natural history of the dog, we shall find he is one of those animals fond of rambling about in search of a mate, and particularly after dusk. When in search of another of his species it is more than probably, should he be in the farm, he will make his way amongst sheep; and if so, he is certain to have a run after them—at first it is mere play, but it soon becomes vice; and once the flavor of mutton crosses his incisors, he is never a welcome visitor upon a farm. My argument was thus—that to prevent a dog from leaving his home is the only effective way to prevent his worrying sheep. By operating as I have hinted you will most certainly gain that point. I have, during the many years of professional experience, had occasion to perform the operation alluded to many times, and in every instance the animal so treated has remained faithful to his post and to his master, never at any time showing the least inclination to follow other dogs, but the reverse; they seem to have an antipathy to all strange dogs. This, I can assure you, is not an imaginary remedy. The two dogs I possess are not entire, having undergone the operation when puppies. Owners of pet dogs would gain another advantage, especially where there are children, I need only refer to their habits. Some persons, doubtless, will urge the costliness of such remedy, the risk, the pain, and all the rest of it. I would mention for their information—there is no risk in the first place; secondly there is but trifling pain; thirdly, I would be happy to operate upon as many animals gratuitously as may

be brought to me for the purpose. This will, I think, meet the case in point. If the powers that be would take this into consideration and pass a bye law so as to cause owners of dogs to either keep them properly secured both by day and night or have them emasculated, they would confer a great boon upon agriculturists, and particularly to sheep owners.

APPLICATION OF CHEMISTRY TO AGRICULTURE.

Translated for the Mark Lane Express.

FROM A LECTURE BY BARON JUSTUS VON LIEBIG, AS DELIVERED AT A PUBLIC MEETING OF THE ROYAL ACADEMY OF SCIENCES, IN MUNICH, NOV. 23, 1861.

This day, when Bavaria celebrates the anniversary of the birth of its king, the Academy of Sciences meets to express its wishes for the well-being of the monarch. To the sentiments of joy, fidelity, and devotion which burst from the whole population of Bavaria, are added from our Academy those of a profound and respectful recognition for the protection accorded by the king to science. True, all classes do not comprehend what analogy exists between their well-being and the protection given to science. It will not, therefore, be out of place to take a glance at the development of the agricultural profession, showing how powerful is its influence, and how far it has extended.

No profession has felt less than agriculture the influence of the progress of the age; in none had the old routine been more firmly rooted, or the obstacles to amelioration been more powerful. If we picture to ourselves the task that agriculture had to accomplish, if we examine the state in which it was 33 years ago, it seems that the accomplishment of that task was altogether impossible without a radical change in its mode of operation. The task it had to fulfil was the production of meat and bread, necessary for a population ever growing; and we can easily comprehend the extent of it. In the States of the Union of German Customs, Hanover and Oldenburg excepted, the population has increased since 1818 little more than 1 per cent.; while there were in these States, in 1858, nearly two millions of men more than in 1848. Taking it at the lowest estimate, and allowing for the sustenance of each man 1 kilogramme of rye, or its equivalent, per day, we have per head and per year 365 kilogrammes of rye. Therefore, in 1858, the population of the Union of Customs consumed 7,250,000 metrical quintals more than in 1848, and 29,000,000 more than in 1818; and if the population continues increasing in the same proportion, the consumption of rye in 1871 will be nearly 25,000,000 metrical quintals more than

in 1851. When we consider that the cultivable surface of the earth cannot be much enlarged, the satisfying of such an enormous excess of wants, increasing daily, seems to be an exigence which it is almost impossible to provide for.

Let us suppose that in the last ten years of the past century the population of Europe had increased at the same rate that it has done since 1818, we should have seen in the course of two generations a state of things equal in horror to those which existed in the middle ages. For agriculture such as it was then, and indeed has been till within the last few years, was entirely without the means of furnishing food equal in proportion to the increase of a population always growing. As it is with certain kinds of beasts, when the want of nourishment is felt, the strongest attack their more feeble neighbours, and fight till they have devoured them, so it is with us; but only amongst people the most savage does one devour another, whilst in more civilized nations hunger creates a cruel thirst for blood, which seeks to satisfy itself by domestic revolutions or foreign war; and the great battles at the end of the last century and the beginning of this appeared then as natural phenomena destined to re-establish the equilibrium between the production and consumption of alimentary substances.

In the last twenty-five years of the past century, agriculturists had no idea of the true causes of fertility in the soil, and of the exhausting of it by culture. Besides the sun, dew, and rain, the cultivator knew comparatively nothing of the conditions of development in a plant. Many thought that the earth merely served to furnish the plant with a solid spot in which it could vegetate. It had been known for many centuries that by carefully cultivating the surface of the soil the produce would be increased, and still more by using the excrements of animals. They thought that the action of stable dung was produced in some incomprehensible way which art cannot imitate, just as the food acts that passes through the body of man. They thought that on every farm, with sufficient cattle, they could produce, by means of a certain succession of crops, a mass of manure so great that there would be no end to its production; that the raising of the produce of the earth depended upon the labour and ability of the man in the culture of his fields and the suitable choice of the crops he put in them. One fact that might often be observed was that one man would ruin himself on a farm, whilst another would make money by it; that the produce of the farm increased or diminished according to the man that cultivated it; and thus was formed the belief that increased produce depended upon the will of man, and that he could, if he only knew the art of doing it, transform into fertile meadows sandy plains apparently sterile.

Towards the end of the last century, a man of superior mind succeeded in laying down some rules for the culture of the earth, until then without laws, and in making it a profession. From some rules discovered by himself in the culture of his farm, he could calculate in figures what was the productive faculty of the soil, how much it exhausted itself by the culture of cereals and commercial crops, how he should manage it—whether he could enrich it by the culture of roots or fodder crops, and what quantity of dung was necessary to repair the loss. Thaer thought that what the cultivator carried off from his fields under the form of grain or food he could return to them by regulating the quantity of the force of the soil. What the force of the soil was he could not tell, and the idea he formed was that it was connected with things which operated in the earth like the phlogiston from oxygen.

In the doctrine of Thaer, and his ideas of the equilibrium between the productive force of the soil, the consumption created, and the necessary means of repairing its loss, there was a germ of truth capable of complete development; but in the hands of his ignorant successors, who were strangers to science, as if under the influence of an evil genius, they had made no use of the progress effected in natural sciences since Thaer, consequently his doctrine degenerated into a system void of sense. The faculty of *power or practice* was, according to them, the principal thing; but to know in what consisted the *power* they imagined was quite unnecessary. We should, according to them, attach ourselves to experience; "With a theory," said they, "we shall never manure the fields."

We who have seen the end of this system of culture can comprehend the result. What they called experience was not the true experience of those who have proved it. They held then, as an incontestable truth, that the diminution or increase of the produce of land was in proportion to the quantity of humus that it contained, or with the diminution or increase in the land of certain combustible principles, which the cultivator should use all his efforts to increase. There was truth in the doctrine, that upon fertile soil more plants will grow than upon an infertile one; and that in a rich soil more organic debris will be amassed than in a poor one. They had confounded the *effect* with the *cause*, and had taken the effect for the cause itself. A poor field, thought they, would give much larger crops if the cultivator knew how to make more humus; and that principle would be incontestable, if they could produce humus in land which does not contain the necessary condition for the growth of plants.

One can get an idea of the means they employed in keeping up the production of land by calling to mind that Thaer, in 1806, attached little value to phosphate of bones, and

attributed its effects to the quantity of gelatine they contained. Again, in 1830, Sprengel taught that bones as manure were of no use in Germany. They knew, for a fact, that in England, pulverized bones were used as an indispensable means of increasing the produce of English fields already very fertile, but such was the blindness produced by their false doctrine, that the German cultivators saw with perfect indifference the exportation to England of several million quintals of bones. How their doctrine supported itself in their experience, and how false they discovered it to be, we may judge by the fact, that now there is not a single cultivator in Germany of any intelligence who believes it possible to keep up or augment the fertility of the soil without the use of bones.

The ground upon which their doctrine supported itself was, that in the lands of Moeglin powdered bones produced little or no effect; as is the case still. They produce no effect upon some fields, not because the bones themselves are useless, but because they do not know the right method of rendering them active.

They believed, in fact—and that was the basis of Thaer's system—that the whole land of Germany was the same in nature; and, as they did not know how and to what purpose manure acted, they thought they could try upon any land whatever the effect of every manure. Upon Thaer's fields bone-dust had no effect, and they therefore concluded that it would be the same all over Germany; and, consequently, it was useless trying it.

The production and increase of humus, which in the time of Thaer was considered as the most important feature for agriculture, has now ceased to be the cultivator's efforts; and all that is indispensable for keeping up and increasing the produce of land, in the shape of grain or meat—all that was then, in blind ignorance, left to waste, through believing imaginary rules and experiences—all *that* the cultivator now brings, at a great expense, from America, Australia, and Africa. As the productive force of the soil, such as they imagined it, did not exist, it was evident that the agricultural equilibrium built upon that force of soil could never accord with the results of culture; and that the state of the land, such as it should have been, according to their accounts, was in perpetual contradiction to the truth. Where a field, after a rotation of crops, should have gained 25 per cent. in the force of soil, it had in reality lost, because they gave it nothing to replace the conditions of fertility that they had taken from it; and when they thought to have doubled the force of the soil, there was nothing left of its primitive strength.

Nevertheless, the practitioner had no doubt of the truth of his doctrine. He explained in this manner the contradiction which existed between his doctrine and practice: he thought that the talent of putting his doctrine into prac-

tice had failed—that, by certain peculiar circumstances, the doctrine was not altogether applicable to his land, and that, though certain principles were tried with advantage in England, they were of no use in Germany. Thus, all the supporters of that extraordinary system of culture held this strange position; they recognized the principles which had been taught them, as true in theory, though inapplicable in practice. And, what was worse, the effect produced upon those who could not distinguish true doctrine from false theory was an utter horror of scientific instruction.

The idea of perfection that man attaches to mathematical operations, and to all that resolves itself into figures and measures, caused the name *rational* to be given to a culture based upon of agricultural statistics. From that time there were *rational* and *non rational* cultivators, and the one knew as little as the other of the reason or motives of their manner of acting. In fact, the reason was none other than the number of pieces of money with which the method of culture was measured and compared.

The cultivator who abandoned the triennial distribution for the alternate sowing, and found his revenue increase, regarded the new method as the rational one, and threw behind him a glance of pity on his old way of culture. None saw that the change to alternate distribution was in itself an indication of the improvement of his fields, because in the countries where the triennial cultivator saw his labours remunerated by heavy crops of grain, no one thought of being able to get any advantage from the alternate course. If nature had not so abundantly supplied the cultivable soil with all that is necessary for the existence of men and animals, and if the changes which the earth undergoes from one harvest to another were visible, the practical cultivator would soon become convinced that his rational culture did not rest on a golden soil, but that what he mistook for gold was only a gilt surface. Several generations must have succeeded before it was known that his was a false route. The dazzled eyes of the practitioner saw only false and disfigured images. It astonished him that, after having for thirty years well-tilled and manured his fields, their fertility was not the least in the world increased. He remembered that his father with less manure gathered more grain and less straw, and that in the time of his grandfather the hectolitre of barley had weighed from 10 to 15 kilogrammes more than now. "But," thought he, "I need not seek the cause in the land, for it looks the same as it did formerly; nor can it be my fault, for I have cultivated it with much more care," &c.; but the evil was that, peas, clover, and fodder plants in general would no longer succeed. If he could only find means of getting more frequent crops of these plants, then his trouble would be at an end. With more fodder he would have more manure, and with plenty of dung he could obtain large grain harvests. If he only

had enough fodder the grain crops would come of themselves. His system of culture was based on the production of manure, and that on the production of fodder. It had taught the cultivator that he should transform his fodder into stable-dung, and that manure was the matter that his art transformed into meat and bread. But it had not taught him what he should do to procure the manure when fodder would not grow in the land: it had only taught him that cereals and certain commercial crops exhausted the soil, whilst fodder spares it, besides improving and enriching it.

If cereals cultivated successively on the same field, did not produce the second or third year satisfactory crops, they said the land was sick. For the same phenomenon they had two different causes. In the first case they supposed the cause of non-success to be the failure of certain principles; and, in the second case, want of activity or strength. For the exhaustion of the land the cultivator found a remedy in manure, for fodder, he sought a medicine, or, as for a lazy horse, a whip. "What will be the end of agriculture," cried these practitioners, "if we must manure fodder plants as we do cereals? The farmers can scarcely produce enough manure for the cereals, and where would he get it for other crops?" The practical cultivator had neglected to get intelligence in his practice; he had worked as a shoe maker exercises his trade; but he had not seen what the shoe-maker does see—that his quantity of leather is constantly exhausting. He had treated his fields as a piece of leather without end, which if one cuts at one end it sprouts at the other. The manure was to him only the means of lengthening out and softening the leather, so as to make it cut more easily. He treated it as if God had worked a miracle for him—not for the preservation of the human species, but to save the cultivator the trouble of thinking of the source from whence flow the blessings of the Creator. In the school of agriculture they had taught him that the true talent of the cultivator consisted in cutting from the immense quantity of leather, which the land supplied, the greatest possible number of shoes in the shortest time, and at the least expense, and that the best masters appeared to be those who carried to the farthest that art.

There was no lack of voices that raised themselves in defence of that doctrine, and one of the greatest evils that it caused subsequently was that the cultivators were quite content with occasionally obtaining from their land heavy crops, which sustained itself, and which even increased as well as enriched them, and gave colour to the belief that they owed to their intelligence and ability what was only traceable to their land, which gave them, without trouble, what others could not obtain from theirs with the greatest efforts.

To the evident fact that the harvests diminished upon an infinite number of lands, these happy cultivators opposed their own local experi-

ence to prove that the doctrine of agricultural equilibrium was correct, and pretended that if the others would only decide upon following the same mode of culture which had been so successful with them, there would be an end to all their difficulties; that all lands were of the same composition as theirs spoke for itself, and therefore, conformable to their experience, the conditions of fertility should be with them inexhaustible. It was in reality conformable to true experience, that the fields of these happy cultivators still gave some large crops; but how many times more they would give them, was a question which no one was prepared to answer. The tradesman, or as they say in agriculture the practical man, did not trouble himself with such questions; but, nevertheless, he would perhaps have been wiser, had he taken them into consideration. What was most opposed to his thoughts was the doctrine itself; it had become an article of faith that the soil is inexhaustible; for if it had been exhaustible, the system of culture had had no more foundation, and to doubt its exactitude would have appeared a wilful refusal of truth.

After some years, difficulties of every kind multiplied in culture, and still farther was felt the want of manure. Some by exerting all their powers could not succeed with the means at their disposal in increasing their produce of grain and meat. Others, in many places, appeared scarcely to avoid diminishing their produce. It is evident in this embarrassed state agriculture could not satisfy the wants of a growing population.

During that time, amongst the natural sciences chemistry had made sufficient progress in her own reconstruction to enable her to take part in the development of other sciences; and while chemists laboured to search out the phenomenon of life in plants and animals, they found themselves in connexion with agriculture.

The chemist had begun to study plants in all their parts—he examined the leaves, stems, branches, the roots and fruits; he pursued the phenomenon of the nutrition of animals; he sought to discover what the aliments became in their bodies; in short he analyzed the lands of almost every country in the world. He recognised that plants absorbed certain parts of earth, which aided the formation of their bodies, and that it returned under the form of ashes after the combustion of the plants, and that these ashes are for the nourishment of other plants, just as bread and meat are of man, and fodder for cattle; that a fertile soil contains much, and an infertile soil very little of these nutritive principles—that if they are increased, the poor soil will become fertile; that good soil would speedily become infertile when by the production of plants, and gathering them from the fields where they had vegetated, the provisions of the land had become lessened: and in order that the soil may remain fertile he must completely restore what was taken from it; if the

restitution was not complete, he could not reckon upon the return of the same harvest; and it was only by giving to the soil more than he took from it that the produce could be increased. The chemist showed further (to serve as a comparison), that the aliments of men and animals operated in their bodies as in a furnace where they are burnt. The urine and solid excrements are the ashes of nourishment, mixed with sweat and the produce of imperfect combustion, and the good effects that they produce upon fields are easily explained, because they supply to the land what was taken from the crops grown there; but with stable dung, produced on the farm, he cannot cultivate for many years together, because it returns nothing to the land, of all its produce, which had been transported into the towns. The farmer should then endeavour to draw from other sources the fertilizing principle which are wanting in dung, and it is only by using artificial manures that he can render fertile the exhausted land. The task of the cultivator does not consist in producing, at the expense of his land, large crops of what impoverishes the soil; but he should, on the contrary, try to produce good harvests without diminishing, but rather increasing its fertility from year to year.

(Concluded in next number.)

Agricultural Intelligence.

ROTATION IN CROPPING.

EDITORS OF THE CANADIAN AGRICULTURIST:—
Sir:—I beg to inform you that we have at last organized a Farmers' Club in our Village. They have made me President. We have had only two meetings; have some twenty-five names on our list, and expect a large increase. I am most anxious it may prosper; it is much wanted in this county. I have not met a man in the County of Kent who has the slightest notion of farming, or has any idea of rotationary cropping. They are ruining the splendid land of this country, and keeping themselves in beggary.

The subject for discussion on last night of meeting, 24th inst, was the best mode of farming 100 acres, 60 cleared, 40 in woods. I made a poor attempt to lay before them some plan of rotationary cropping; you will find it, with all its faults, subjoined. I think if you would let us have a plan of a well-worked farm, something in the form I submit, it would be most valuable. You see I go back for seven years; I attempt to show the crops raised in each field for that period; then, at a glance across my seven fields, you see the crops I raised each year on my farm. By glancing across the diagram, from North to South, you see opposite

EAST.

WOODS, FORTY ACRES

SUCCESSION
OF CROPS IN
EACH FIELD

	Field No. 1, 8 Acres	Field No. 2, 8 Acres.	Field No. 3, 8 Acres.	Field No. 4, 8 acres	Field No. 5, 8 acres	Field No. 6, 8 acres	Field No. 7, 8 acres
1st year, .. 1857	Wheat.	Pasture, Fallow.	Pasture.	Meadow.	Spring crops.	Manured, green crops.	Spring crops.
2nd year, .. 1858	Spring crops, oats, barley, flax, peas, &c.	Wheat.	Pasture, fallow.	Pasture.	Meadow.	Spring crops.	Manured, green crops.
3rd year, .. 1859	Manured, green crops, corn, potatoes, &c.	Spring crops.	Wheat.	Pasture, Fallow	Pasture.	Meadow.	Spring crops.
4th year, .. 1860	Spring crops, wheat, barley, &c., laid down.	Manured, green crops.	Spring crops.	Wheat.	Pasture, Fallow	Pasture.	Meadow.
5th year, .. 1861	Meadow.	Spring crops.	Manured, green crops.	Spring crops.	Wheat.	Pasture, Fallow	Pasture.
6th year, .. 1863	Pasture.	Meadow.	Spring crops.	Manured, green crops.	Spring crops.	Wheat.	Pasture, Fallow
7th year, .. 1863	Pasture, fallow.	Pasture.	Meadow.	Spring crops.	Manured, green crops.	Spring crops.	Wheat.

revison

Calif

quar

Sheep

Orchard

Garden

Hog pen.

Hog yard.

Roots

Barn

Stable

Cow houses, &c.

Wood house

doug etc W

= (

PUBLIC ROAD.

WEST.

* Octagon Forts, or Clumps, Shelter for Cattle.

NORTH

H H D O S

the year the crops which will be in any particular field for the year; and by looking downwards, from East to West, you see the succession of crops which will take place in each individual field during the seven years. This is the seven year shift, and I think would answer this country. I did not follow any at home, in old Ireland. My plan of cropping was as follows: 1st year—Ploughed the pasture in the fall, then oats. 2nd year—Ploughed deeply in the fall, then flax. 3rd year—Ploughed deeply in the fall, then green crops. 4th year—Wheat, spring crops, &c., laid down. 5th year—Meadow. 6th year—Meadow or pasture. 7th year—Pasture ploughed in the fall. By this plan I broke up the seventh of my farm each year. I manured each field once in seven years, laid down once in seven years, and my flax crop came no closer than every seven years, as it should do. I won't trespass longer on your valuable space; let us have your opinion on the system. I enclose you 50c. subscription for your *Canadian Agriculturist*, and I trust when we get rightly to work to get a good club up for you.

Please send us a list of books you would recommend us.

Yours, &c.,

EDWARD MCCOLLUM.

Orford, Co., Kent, Jan. 26, 1863.

REMARKS.—The rotation proposed by our correspondent is a very good one for good loamy clay soils, although it is somewhat more symmetrical in the division of the fields than could be always carried out in actual practice, owing to natural features of the land, occasional failures of crops, &c. The occurrence of two grain crops in succession is also somewhat objectionable if it could be avoided; but a good strong soil might bear it, and the field would be in pretty good condition after being three years in meadow, pasture, and fallow. The field would be also resuscitated twice during the period of the rotation, at pretty nearly equal intervals of time, first by the manuring for the green crops, and next by the pasturing and fallow, so that there would not be any long succession of exhausting crops under the system. Altogether our correspondent, or others, would do very well by following such a system of rotation, or as near an approximation to it as circumstances would permit, on suitable soils. In practice, it is not usual to leave the woods in so long and narrow a strip on one side of a farm, but if standing on the side most exposed to the prevailing severe winds and storms, this plan might have advantages. As requested by our correspondent we suggest a brief list of books which may be recommended either for private reading, or for the library of the Club, with the prices at which they are sold,

about, viz:—Stephens' Farmers' Guide, 2 vols., \$5; Johnston's Lectures on Agricultural Chemistry and Geology, \$1 25; The Farmer's Encyclopedia, \$3; Goodale's Principles of Breeding, \$1; Flint on Grasses, \$1 25; Boussingault's Rural Economy, \$1 25; Morton's Encyclopedia of Agriculture, (English) 2 vols., \$12; Youatt & Martin on Cattle, \$1 25; Dana's Muck Manual, \$1; French on Farm Drainage, \$1; &c., &c.—EDS.]

THE LATE HON. ADAM FERGUSSON.

CROWLAND, Jan. 23rd, 1863.

EDITOR OF THE AGRICULTURIST:—*Dear Sir*:—I send you the following Resolution for publication in your Journal, as passed at the annual meeting of the County Welland Agricultural Society for 1863, viz:

"Moved by T. C. Street, Esq., M. P. P., and Resolved:—That this meeting fully concur in the sentiments of respect expressed in regard to the late Hon. A. Fergusson. Whether as a man, a Christian, or the services rendered to his adopted country as an agriculturist, and that the same be recorded in the journal of this Society and a copy of the same sent to be published in the *Agriculturist*."

Yours truly,

A. RIED, Sec., C. W. A. S.

SMITHFIELD FAT CATTLE SHOW.

The Annual Exhibition of this long established Society took place at the usual time, about a fortnight before Christmas, in the new Agricultural Hall at Islington, a densely populous suburb in the north of London. The accommodation in Baker Street, where these exhibitions have been for many years held, having become too small, and not well admitting of more extension, the Society commenced a new building on the joint stock principle, composed largely of iron and glass, on an extensive scale, and while specially adapted to the purposes of its shows and similar objects, it possesses a distinct architectural character and is decidedly a pleasing object to behold, whether from the interior or exterior. It cost about £40,000 sterling, and such has been the successful issue of its opening, contrary to the prophecies of a number of people who felt interested in its objects, there is good reason to believe that, in addition to the Society having the most ample accommodation for its Exhibitions, the stockholders will receive a handsome return for their outlay. The Show was kept open five days, during which about 150,000 people entered; a large number paying five shillings each the first day; one shilling being the entrance for the four days following.

From the reports that have reached us the

exhibition does not appear in itself superior, except, perhaps in number or magnitude, to some of the best of its predecessors. "After Baker St.," one observes, "it takes some time before the eye can do full justice to cattle in their new Christmas home, as the magnitude of the place sadly dwarfs them." The Devons lost strength by the absence of the wonted Holkham entries; the Herefords were not specially strong in oxen and steers, lacked beauty, and a few more good looking females; while eight or nine of the latter rather atoned for the paucity and second-rate stamp of the short-horns. The sheep were numerous and generally excellent, the Southdowns carrying off the palm. The pigs too were quite up to the high standard usually looked for on these occasions. The extensive ranges of galleries were filled to repletion by implements and machines of all descriptions, having an application to agriculture. In looking more minutely into the reports which have only just reached us, if they contain anything novel or that would be particularly interesting to our readers, we shall again refer to this exhibition in the next number.

THE BIRMINGHAM AND MIDLAND COUNTIES CATTLE SHOW.

The Exhibition which came off the beginning of this December, may now be considered as firmly established, and will form no mean rival of the celebrated and long established Metropolitan fat Cattle Show generally known as the Smithfield. The Birmingham show this year, judging from the several reports we have seen, appears to have been superior to most, if not all, of its predecessors.

The sheep were more numerous than on any former occasion, and the quality is stated as superior, particularly the Downs and Shropshires. Cotswolds were also excellent, but the Leicesters, from some cause or other, did not appear to their usual advantage. The *Mark Lane Express* speaks of the two classes of fat wethers of the Shropshire breed, as the finest ever seen together." It further observes; "Great and grand in their appearance, the Shropshires only require more uniformity of expression," to tell more in public; while the individual excellencies of almost every trio were amply sufficient to give them some standard of their own."

The Herefords, as was to be expected, mustered in large numbers, and as a breed were remarkable for their characteristic points, and uniform rate of fatness. The Shorthorns formed an excellent show both as to number and quality. Mr. Eastwood's superb cow, which we had the gratification of seeing two years ago at the Royal English Show at Canterbury has at last been well prepared for the butcher. She is described as being a beautiful, compact, hardy,

and silky touching animal, 8 feet 9 inches in girth, and which before she was tied up in order to fit her for the tender mercies of the butcher, had given birth to three calves." The Devons were not numerous, and as a class, were inferior to others. The best animal in the yard was bred and owned in Scotland, and was a cross. The *Express* remarks:—

"But there is nothing like the force of a good example, and the best beast in Bingley Hall was again declared to be from over the Border. This ox, the property of Mr. James Stewart, of Aberdeen, is not even pure bred, but another illustration of that favourite cross—about the best out—between the Shorthorn and Aberdeen polled. He is a bullock more remarkable for extraordinary size than handsome appearance or completeness of points. At the first glance, indeed, there is nothing very taking about him, but he has fed well, and his great girth of 9 feet 9 inches will afford some index of his immense growth and development. Nevertheless the beast appears to stand rather high on the leg, and is by no means as even as some of those brought out at the last against him. At now nearly five years old, his owner candidly admits that amongst other condiments *treacle* has been an item in his very varied bill of fare. However, although no such special favourite of our own, the Aberdeen cross triumph is a very signal one, as one of the steers brought out against him for the Gold Medal was the Birmingham and Smithfield Club Gold Medal steer of last year, on the occasion the best of the aged Shorthorn Ox Class. This beast, now the property of Mr. Swinnerton, won the All England premium at Rugby, on Thursday, and a few months since was the best of all the fat stock at Leicester, where we spoke of him as terribly gone off. In the interim he has freshened up wonderfully, and showed almost as well as ever again in his old quarters, though doomed to suffer a double or treble defeat on his last year's performance, as he was not even the best Shorthorn.

Our readers will form an idea of the magnitude of this exhibition from the fact that the awards, including cups, amounted to £1825. The display of Poultry was very fine and extensive, and the "Dog Show," a separate institution however, but held at the same time, attracted a vast crowd of spectators.

CANADA AT THE GREAT EXHIBITION.

From the Canadian News, Jan. 1.

We have been favoured with a sight of the report of the Jurors of the late International Exhibition as it is now passing through the press, and we are pleased to notice the very laudatory terms in which the labours of Sir Wm. Logan, Mr. Chamberlin, and Dr. Hurlbur have been mentioned, the Canadian Department being characterized "as one of the most complete illustrations of the resources of a colony."

ever exhibited." Speaking of Class IV., Sec. C., being on the vegetable substances used in manufacture, the report says:

"At no previous exhibition in this or any other country has so splendid and valuable a display of the products of forests and plantations been exhibited, not only when we consider the magnitude of the various collections sent from almost every country, but also in regard to the admirable care which, in almost all cases, has been shown in the preparation of the specimens of which they were composed. Science and commercial enterprise have gone hand in hand, and we have no longer to regret that absence of correct information respecting the producing plants and other important particulars, which rendered so much that was sent to the exhibition of 1851 comparatively useless. Most of the collections now exhibited are labelled correctly, and not only do we find the scientific names of the trees attached, but in many cases valuable information respecting the qualities and quantities of the timber are given.

"In point of size of specimens, excellent selection, and information given, the Upper Canada collection of woods is undoubtedly the finest in the Exhibition building. It is contributed by sixteen individuals, and consists of plank logs, squared logs, transverse sections, polished specimens, veneers, and very extensive series of scientifically collected and named leaves, flowers, shoots, &c., &c.

"This collection further derives much of its exactness and scientific value from the exertions of Dr. Hurlburt, who appears to have both systematically named and arranged the collections and contributed to their completion in various ways."

A fifth volume of the Hereford Herd Book is about to be issued by Mr. Duckham. It will be illustrated with a dozen beautifully-executed lithographs of choice specimens of the breed, including all the first prize animals at Battersea, from sketches by Mr. Gancie. Among the entries are several from America, Canada, and Ireland, and a valuable addition has been effected by affixing to each animal a record of his show-yard triumphs. An equally convincing proof of the steady advance of "the rent payers" is to be found in the greatly enlarged list of subscribers.—*English Paper.*

FLAX PRODUCTION.—The Guelph *Mercury* says: "Mr. John McCrea bought in Guelph market last week a load of dressed flax from Mr. Hennyberry of Elora for \$242 50. The load weighed 20 hundred, and was the produce of six acres. In addition, the seed derived from this crop is worth \$120, and the tow from \$100 to 100 to \$150, making in all \$462 50—a return which few of our farmers have realized in this county off the same number of acres from any other crop. Mr. Hennyberry erected a flax mill at Elora last summer, and mainly through

his exertions upwards of 70 acres of flax were grown last year in the district. There is little doubt the quantity grown next year will be much larger. A ready sale for flax can always be had in Guelph, as Mr. McCrea will buy it up. Surely our farmers, who have of late been complaining so much of scant and uncertain crops, will see that it is their interest to try the experiment of growing flax. With a ready sale, good prices, and a sure crop, they would realize more than they now do, and would besides encourage those who are anxious to see it cultivated to build mills for cleaning the raw material, and for its manufacture."

The Dairy.

FACTS ABOUT MILKING.

As a general rule, cows should be milked twice a day.

The times of milking cows should be invariable all the year round, at six in the morning and six in the evening.

If in the early state of milk, after calving, it should be found that a cow's bag becomes too full, it may be desirable to reduce the bag in the middle of the day, in which case eight o'clock in the evening will be early enough for the last milking.

The great eagerness to relieve the overpressed bag of the cow may have an injurious effect by weakening its power of retention.

It is the custom in Yorkshire to give cows something to eat during the milking, to keep them pleased and quiet under the process.

In milking the hands should be dry and clean, as wet hands crack the teats in cold weather, and dirt injures the skin.

In milking, take care that all the last of the milk is drawn off, as the last pint is richer for the production of butter than two quarts at the commencement of milking.

Imperfect or slovenly milking will dry off cows prematurely.

Annoying or disquieting cows while milking has a tendency to diminish the quantity of milk.

Milk as quickly as possible, and never leave the cow during the process.

An active milker may milk five cows in an hour.

Six weeks before the cow is to calve commence to dry the cow by milking once a day for three or four days, which will diminish the quality; then cease milking three days which will diminish the quantity.

All milking of cows ought to cease at least one month before the time of calving.

In finally drying up a cow's milk care must be taken not to leave a quantity in the bag to be absorbed, as it may produce disease.

Let the milker keep his temper and treat young cows kindly, for young animals never forget ill treatment, and a recurrence of similar circumstances will remind the cow of former punishment.—*Farmington Chronicle.*

GOOD BUTTER IN WINTER.

For the benefit of my lady friends, I will give my experience of twenty-five years, in making as good butter in winter as in summer. In the first place we suppose the cows to have been fed on good feed. After the milk has been strained, put on the stove to heat, either in the pans or in any other way thought proper. Do not make it too hot, or the cream will not rise; it may then be placed in a clean cellar, free from vegetables or anything that will give the cream an unnatural taste, or in a cupboard with a canvass door, in a moderately warm room; if in the latter place, it should not be put in until the steam has passed off, otherwise the shelves will be liable to mould. The milk should not stand longer in winter than in summer, or the butter will be bitter. In 36 or 48 hours it should be skimmed, if in a cool place, sooner if in a warm one. If the milk is thought to be too rich to give to the pigs, let it stand longer, and use the cream that rises on it for shortening or in some other way than for butter.

If the milk has been kept in a cool place, take the cream to a warm room a day or two before churning. If you wish the butter to look and taste like grass butter, grate orange carrots, put some hot water or milk to the pulp, strain and add it to the cream, which should be a little above 60 degrees when you commence churning. A common sized teacupful will color six pounds of butter. After churning, draw off the buttermilk, put cold water in the churn, and churn a few minutes, and if managed right, you will never fail of having good butter. I rejoice that the prejudice against washing butter with cold water is slowly passed away. Heating the milk I believe is an English method, and ought to be more generally practised, then there would not be so much poor butter in the market.—BUCKS CO. FARMERS' WIFE in *American Agriculturist*.

The Poultry Yard.

ON GENERAL TREATMENT OF FOWLS.

The best guide is Nature, and we should always follow her as closely as possible in the treatment of our stock. Fowls are always grazing animals, and pick up grass, or any green food in quantities. If therefore you cannot give them complete liberty (and this is impossible where large numbers and varieties are kept), you should, at all events, allow them a daily run in grass park. One hour's liberty is sufficient to keep them in health, and their enjoyment of this boon is so great that, even were there no other reason, that should be sufficient inducement for you to give them their bit of happiness, even at the expense of trouble to yourself.

It is astonishing how soon fowls accommodate themselves to the regulations of the establish-

ment. A day or two suffices to make them acquiesce in all our wishes, and enable them to recognise without apparent difficulty their respective yards. Fowls seem to understand the value of their hour's play, and lose no time (the trap once opened) in availing themselves of it; they rush to the grass, and never cease picking it until driven home. Great care must be taken that one set is put in before the other is let out: this demands hourly attention, as by one moment's carelessness in allowing breeds to mix, hopes, for a whole season may be destroyed. If there are several yards of the same breed, these, to save time, may be allowed to enjoy each other's society during their run, as a *faux pas* in their case, though not advisable, need not be fatal; but never let out different varieties together. One single *mesalliance* will ruin the purity of the breed. At no season of the year should hens be allowed to associate with the male bird of a different variety, and if super-eminent excellence is desired, not even with an inferior one of the same.

While the fowls are enjoying their grass run, their yards may be dug over; twice a week is not too often for this operation. Occasionally a little of the soil pared off, and fresh sand strewn in its place. At all times perfect cleanliness, in yards and houses, should greet the eye of the lady visitor—it is the grand requisite. At the risk of appearing didactic, I must insist upon this *sine qua non* in a poultry establishment, great or small, be it that of the "laird," or that of his "tenant." I do not say with some writers, "If the floor of the house can be cleansed every morning, so much the better;" but I say, "It must be done," and scrupulously so, too. If the floor is as hard as it ought to be, a birch broom is the best implement that can be used for this purpose.

The supply of water must be copious, and of the purest description, and the dust-bath always provided with ashes for the use of the fowls. They love to roll themselves in this, scattering the contents over their feathers, to the effectual discomfort and dislodgement of all parasites. A heap of lime rubbish or old mortar should be placed in a corner of each yard—poultry are fond of it, and it is conducive to their health. Once a year, the interior of the houses should be lime-washed, and the floor saturated with the same mixture; this keeps all perfectly pure and free from taint.

It is good, during warm weather, occasionally to sprinkle water over the perch, and in its vicinity, scattering a little sulphur over the wetted parts. This ought to, and in a great measure does, prevent the appearance of any obnoxious animalculæ, which, too often, in even well-regulated establishments, make their way good, to the torment of the occupants and their attendants. Depend upon it, the more we attend to our domestic animals the more they will repay our care.

To realise excellence demands the most unflagging zeal and energy on the part of the mis-

tress and her servants. Every day must have its apportioned work carried out systematically, with honest vigor, in cold or heat, in rain or sunshine. Poultry must not be capriciously dealt with—a feast one day, a famine the next. Superiority cannot thus be attained. Where a hearty good will is shown by those appointed to tend your flock, and a kind interest is taken by them in its welfare, you have the surest foundation for success. There may sometimes be a little difficulty in effecting reforms in management. Old prejudices and opinions, too deeply rooted to be eradicated, may be encountered; but, if the lady fancier devotes some part of her leisure time to general supervision and direction, she will soon find that her presence acts like a charm upon even the most obdurate and old-fashioned bigot, who must, perforce, acknowledge the superiority of the new over the *ancien regime*, as proved by the higher condition, greater weight, and increased beauty of the birds.

In cold or damp weather give nourishing food, and plenty of it; while in moult, the birds can scarcely be too highly fed. Amateurs, who themselves look after the wants of their stock, can best judge of their requirements, and will prefer making their own arrangements regarding a dietary table.

Never feed in haste, but watch the peculiarities of taste in your flock, and minister to them.—One fowl may starve while the others revel in luxury. As with children, their likes and dislikes must be studied. And no one kind of food forced upon them, to their disgust, and consequent loss of condition and beauty.

Where young stock, for early market or summer exhibition, is desired, the breeding yards should be made up not later than November.

If fowls are properly fed and attended to, eggs for setting will be plentiful in December.

Avoid breeding from fowls related to each other. It is a baneful system, and results in small, delicate offspring, which easily fall a prey to roup, leg-weakness, and the ills that chickenhood is heir to.

The cost of poultry keep may be considerably lessened by the proceeds of an annual sale by auction, early in the year, before the breeding season.

If the owner is known as a prize winner, the fowls will probably average £1 a-piece, and are, consequently, too valuable for the stock-can, which, otherwise, must be the destination of all that have passed chickenhood, and yet are unlikely to prove prize-takers, or desirable to breed from.

Aspic de volaille, and even cock's combs, when judiciously combined with oysters, truffles, &c., are charming additions to the *cuisine*, but it is not every hen-wife, who, like Cleopatra, can afford to dissolve jewels.

Large sums have probably been required for the purchase of the parent birds, and we value their descendants accordingly. A good foundation was laid, regardless of cost, and the progeny must not be sacrificed.

“You may reduce your expenses by selling eggs for setting, at a remunerative price. No one should be ashamed to own what he is not ashamed to do; therefore boldly announce your superfluous eggs for sale, at such a price as you think the public will pay for them.

Beware of sending such eggs to market.—Every one would be set, and you might find yourself beaten by your own stock, very likely in your own local show, and at small cost to the exhibitor.

Early chickens may be hatched and sold to Edinburgh and London dealers, who will gladly give £2 per dozen, aye, and more, for well-grown, straight-breasted, white-legged chickens, moderately fat. Poultry rearers must not suppose such sums are given for any but early, well-grown, fat chickens.

Leadenhall prices are said to be exaggerated, but residents in the metropolis, during the season, know to their cost what they are, and I can verify them by my own books.

Deem not, however, that all birds sold as spring chickens are so in reality. Many are the produce of the previous autumn, stunted in growth by the hardships of winter. These the verdaunt housekeeper buys, and her master's guests eat them, asking no questions.

The chickens which realize such high prices are hatched early in January, and reared with the greatest care and attention to feeding.

Poultry keeping (though essentially a home pleasure) need not be limited to home. Indeed, it becomes a necessity to dispose, in one way or other, of your superfluous stock. If you breed for exhibition, you cannot too strictly limit your numbers. Out of 100 chickens, you may not be able to match more than two pens for Birmingham, and must therefore leave yourself ample room for choice. This will give an abundance to your establishment, and for the poulterer.—Chickens and eggs should be plentiful all the year round; where poultry are kept on a large scale, and the purchase of either should be unknown. By keeping those breeds that lay early, you command a supply of eggs for daily use all winter, and often have an overplus for market at its dearest season. I shall elsewhere detail the method I have found most effectual for preserving eggs for kitchen use during the scarce season; in summer they are plentiful and cheap, and as I said before, too good for market.

I think I have now given all necessary instructions for the treatment of poultry kept on a somewhat extended scale. Amateurs, who have limited accommodation, should keep only a few first-rate fowls, say a Dorking cock and two hens, two Cochin and two Brahma Pootra hens. These latter lay all winter, sit soon, and bring out Dorking chickens much earlier than the Dorking hens themselves, which are tardy sitters.

The Cochin and Brahma eggs, being dark in colour are easily distinguished from those of the Dorkings. I would advise the Cochin eggs to be used in the household, and a few of the Brahmas

to be set. A cross between it and the Dorking makes an excellent bird for the table.

The pure Dorking chickens can be sold, at good prices to other fanciers. To the breeder they are useless, and are perhaps too valuable to be killed. The original stock will last two years, at the end of which I would recommend that the male bird be replaced by a younger one, of a different strain, and then your own pullets will come into use. A few choice birds can be kept in this way at a very small cost; only one house is required, and that of moderate dimensions.—If the fowls are confined during any part of the day, they must have a yard similar to that described. If they have absolute freedom they find many means of sustenance for themselves in open fields or surrounding shrubberies, and will be in a great measure, independent of the provision commissariat. It is impossible to lay down exact rules as to feeding; experience is the safest guide.

Poultry, if penned up, with only an occasional run, live in complete dependence on the food given, which must always be regulated by circumstances. It must be borne in mind that high feeding is conducive to laying, and the eggs will always pay for the grain consumed, if the yearly average price is taken.

I have thus attempted to show that it is possible to keep poultry, even as an amusement, without loss. It pays best either on a very large or a very small scale. In the latter case it must be viewed only as a "fancy," and if the expense can be covered by the sale of extra stock, it is all that can be expected or desired. On a larger scale, the pursuit resolves itself into a system. The market must be studied for the purchase of grain, and for the sale of your produce. To show a good balance sheet, your household must be supplied during the dearest as well as the cheapest seasons of the year. Your spring chickens must come from your own yards; your eggs, at two shillings a dozen, from your own laying-houses. Thus you live in plenty—nay, in extravagance, had you to purchase all you supply yourself with—and you enjoy the blessing of independence.—*The Henwife, by Mrs. F. Blair.*

The Apiary.

WINTERING BEES.

[As the keeping of Bees is on the increase in Canada, the following observations of a practical aparian, taken from a recent number of the *Maine Farmer*, will not be devoid of interest to several of our readers. We recommend the subject of Bee-culture as well deserving the attention of farmers and others living in the country.—Eds.]

To winter bees successfully in our cold northern climate, is a question of great moment with the apiculturist. There seem to be almost as many ways recommended as there are bee-keepers. Having had several years experience in this business in Northern Vermont, I have arrived at this conclusion, that bees should have for their welfare in winter, a *dark, cool, dry, still* place, where the temperature is even as possible, and about five degrees above the freezing point, or 35 degrees Fahrenheit. In this temperature, the bees will remain very still and quiet, and will require but little honey to what they would if kept in a warmer place.

In the first of my experience, I was advised to put my bees into a tight dark room in the house. I did so, and the consequence was, I lost many of my bees before spring. During the warm days in the winter, the bees would become very lively and crawled out of the hives upon the floor, and if there was a ray of light, they were sure to find it, and would there perish; if shut into the hives, they would create such a heat in trying to get out that they would melt their comb and become drowned in their own sweets. This I found was owing principally to the outside temperature being so changeable and the want of proper ventilation.

Wintering bees out of doors, as practiced by a large proportion of amateur bee-keepers, is always attended with bad results, as nearly one-half the stocks are frequently lost, and those that are not, are so reduced in number, that they will not swarm the coming season, there not being bees enough to permit it, consequently are worth but little to their owners. When bees stand out of doors, every warm day during the winter they are inclined to fly from the hive, and thousands of them get chilled and are lost, and where there was a peck of bees in the hive in the fall, by spring there may be but a handful left. In the Middle or Southern States, bees can be allowed to stand out of doors with safety. In my more recent observations and experiments, especially in the Northern States, I have found no place to winter bees in, equal to a dark and dry cellar.

If the hives are rightly arranged, and the cellar ventilated by opening either a door or window at night time, occasionally, there will be no loss of bees only what die of old age, and the comb will look nearly as white as in the fall previous. Bees when kept in a cellar of this kind, will not make a discharge to soil the comb during the whole winter, and will consume but a very few pounds of honey—say about a pound to a thousand bees; for ordinary swarms it would require from ten to twenty pounds of honey. At this low temperature, the bees will remain very quiet and still, and if the cellar is kept perfectly dark, they will remain so during the whole winter, and will hardly know when spring approaches, which will not be the case when kept in a room above ground or out of doors. Bees frequently receive more injury in

being confined in the hive on the approach of spring, than they will if allowed to fly out.

The time to put bees into winter quarters depends somewhat upon the severity of the weather; usually the last of November or the first of December: if the weather is not too cold, they may safely remain out until near January. They generally suffer more in the latter part than in the beginning of winter.

Position of the hives when placed in the cellar.—If straw or the old fashioned board hive, they should be turned bottom-side up with the bottom boards removed. Their animal heat will then drive all the dampness and mould out of the hive. The only disadvantage in turning a hive bottom-side up, is, all the dead bees and particles of comb will drop among the combs in the bottom of the hive. But if there is honey enough, their will be no trouble resulting from it as when the hive is carried out of doors, and placed right side up, the bees will readily clear it out. If moveable comb hives are used, the cap, boxes, &c., should be removed and the hive allowed to remain right side up, with the entrance closed.

The time to remove bees from the cellar depends in a great measure upon the forwardness of the spring, and care should be taken that the weather is warm enough that the bees can safely fly from the hive and return again, always observing to never set but a part of the hives out the same day, and always place them as near as practicable on the same stand that they occupied the year previous, to avoid confusion and robbery.

After the bees have all made their excursion, as they always will do on the first day, and discharge themselves, thousands of bees might then be saved by setting them back into the cellar again for three or four weeks and at the same time supply each hive with substitute for the bread which is rye meal (or common flour will answer) as bee bread or pollen is the first thing the bees will visit the fields for, in early spring. By supplying them with this useful article the lives of a large number of bees will be saved which, if allowed to stand out, would be lost.

B. P. KIDDER,
Practical Agriculturist.

BURLINGTON, VT., Dec. 1862.

QUEEN BEES' AGE OF FERTILITY.

I believe that the time which intervene between the birth of a queen and the laying of her first egg, varies very considerably, according to season, and the influences of weather and temperature.

Having raised a large number of artificial queens during the last two seasons, I have been able to notice a great difference in the egg-laying age of the queens, even in cases subjected to the same influences. Three boxes were started with royal cells just sealed up, and cut out from an-

other stock on the same day. Two of them possessed newly-deposited eggs in about seventeen days, but in the third after the lapse of a month, no eggs were visible. As, after a searching investigation on two separate days, no queen could be discovered, I determined to unite the hive to another, but when on the point of lifting out the frames for the purpose, I caught a sight of her. The frames were returned to their box, and the intention of breaking up the stock relinquished. In a few days subsequently, the first batch of eggs was deposited, so that five weeks must have elapsed, in this instance, from the time the cells were placed in the hives until the queen commenced egg-laying.

Again in another hive, earlier in the season, the weather being warmer, I do not think ten days had elapsed before a young queen, given to me the day after its birth by Mr. Woodbury, had filled a large space of comb with eggs.

But the most singular instance of an opposite character to the last, occurred in a stock which lost its queen on the 20th of September, 1861. Royal cells were immediately commenced, and a young queen hatched out some time about the 1st of October. I had not a single drone in my apiary; therefore the hive was sent out to a garden in the close vicinity of Mr. Woodbury's bees he having still a few left. Although the hive was closely examined between that date and February of the following year, yet never could I discover a single egg, and expected nothing more than to find the bees dwindle away, or the queen take to laying the eggs of drones only. It suggested itself as possible that impregnation might have taken place in autumn, late as it was, and that the queen had the power of withholding any eggs until the spring; but I must confess it hardly appeared probable that such should be the actual state of the case, and I was very agreeably surprised to find on a subsequent inspection, that she had not only been duly impregnated, but was in reality a very prolific breeder, for in March there was an immense quantity of brood in all stages of development. —S. Bevan Fox, in *Cot. Gardener*.

Horticulture.

FRUIT GROWERS' ASSOCIATION OF UPPER CANADA.

We have as yet seen no published notice of a meeting, held about a fortnight since, of this Association, in the city of Hamilton. We are glad to hear, from a private source, that the meeting was well attended; that a very useful discussion took place on some of the most important topics connected with Canadian horticulture, and that much interest was excited

thereby. Specimens of fruit,—more particular. ly apples—were sent in from all sections of the Province; some of the fruit being exceedingly fine, indicating clearly that we are progressing in this attractive and valuable department of rural economy. This newly formed Association is rapidly gaining a popular and useful position, and richly deserves encouragement. We understand that an elaborate report of its late proceedings in Hamilton will be published in pamphlet form, to which we hope hereafter to have the pleasure of calling the attention of our readers.

[P. S.—Since the above was written the Secretary has obligingly furnished us with a written report of the proceedings, which shall appear in our next.

TORONTO HORTICULTURAL SOCIETY.

This Society continues to pursue a steady course of usefulness, amidst much that is discouraging. Horticulture, even in its higher branches, is doubtless making considerable improvement among us, as the increasing number of conservatories and greenhouses, in and around Toronto, Hamilton, and most of the Canadian towns, clearly attests. We counsel all true friends of this refining, useful, and delightful art not to relax their efforts, but to persevere by united action, in the belief that what is true, elevating, and beautiful, must, in the nature of things, ultimately prevail. The Report of the Toronto Society for 1862 expresses some disappointment that the citizens generally afford it so little countenance and aid, that the burthen has to be borne by so few; particularly when the munificent donation of ground that has been given by the President, G. W. Allan, Esq., for the garden, is taken into consideration. We willingly make room for the following extract from the Report, as its spirit is encouraging:—

We do not, however, wish to speak as if nothing had been done. By the liberality and energy of a few, a great change has been effected in the aspect of the Gardens, and many an eye has been refreshed by their pleasing aspect in summer. But to gratify the eye is not the only object which our Directors have in view. The Gardens should be truly Botanical, where every tree and flower which can survive our winter frosts, or endure the summer's heat, can find its proper place, and where by judicious classification and correct nomenclature the willing student may acquire some knowledge of the wondrous

works of God in the examination of the infinite variety of nature's products.

For the production of such a result, towards which a good commencement was made this last year, under the able direction, most willingly given, of the Rev. and Prof. Hincks.

The past year was marked by the three usual exhibitions of fruit, vegetables and flowers. The May exhibition is to be noticed for several new and beautiful foliage and specimen plants that graced the tables.

If any decided improvement was noticeable, it was in the fruit department; the cherries, plums, pears and grapes being very fine. Several beautiful specimens of orchard house trees, such as peaches, nectarines and pears, laden with their tempting fruit, and displayed at the July exhibition, were deserving of the highest praise, as reflecting the greatest credit upon their respective growers.

It is pleasing to notice the increase in the number of grape exhibitors, amateurs and others fast discovering that at but a trifling expense the best European varieties of the grape can in this climate be brought to the greatest perfection.

Your Society, we think, may take full credit to itself for having stimulated many to the cultivation of this most delicious fruit.

TORONTO GARDENERS' IMPROVEMENT SOCIETY.

The first meeting for discussion of this Society took place on the 19th inst., at the Board of Agricultural rooms. Members present—Messrs. Jas. Fleming, (Chairman); Geo. Vair, C. Young, T. Tillman, E. Townsend, Robert McNish, C. Laughton, James Forsyth, Secretary.

The subjects discussed were the cultivation of the Chinese Azalea, and the best mode of forcing the Strawberry.

Mr. Young in introducing the first subject spoke of the importance of the Azalea as a decorative plant, which may be propagated from cuttings of half ripe wood in a slight heat, early in the season, or in a cold frame during the summer months, and brought into bloom in 18 months from the cutting. He observed that suitable soil is an important matter. He would recommend two-thirds peat and one-third sand.

Mr. Vair thought many of the shy growing sorts of the Azalea might be much improved by being wrought upon stocks of a different variety, and that its value, as he considered it a first class greenhouse plant, would repay the cultivator for all the trouble necessary to bring it to a state of maturity. It requires some attention during the growing season and summer treatment, to be in an open airy situation where the wood may be well ripened.

There was some difference of opinion as to whether the plants should be entirely shaded from the sun, but all seemed to agree that it is important to have the roots well shaded and kept moderately moist.

Mr. Townsend corroborated what had been said, adding that with proper soil any one might grow the Azalea, but without that few would succeed, giving an instance of his experience with some plants potted in such soil as he could obtain about Toronto, and which he was only able to keep alive until he had good peat imported.

Mr. Tillman recommended a small mixture of rich loam, as he thought peat of itself too poor to produce good plants.

BEST MODE OF FORCING THE STRAWBERRY.

Mr. Young opened the subject by stating the usual method of obtaining good plants, which ought to be chosen from the early runners and transplanted into a nursery bed, where they may be kept clean, the young runners removed as they appear, and every encouragement given to induce them to root freely. By the end of August they may be potted in a rich loamy soil, and allowed the full influence of the atmosphere up to the approach of severe weather. When brought into the forcing house, the temperature ought not to exceed forty degrees, but may gradually increase to fifty or fifty-five degrees by the time they come into bloom, at which period they must have all the air and light that the weather will allow. They must also have plenty of water. Manure water will do much to produce large fruit, but if used too freely the flavour may be inferior. He would recommend Keen's Sedling as a good variety for forcing.

Mr. Vair thought that the British Queen would also be found a good variety for forcing, and spoke of the importance of light and air, without which it would be difficult to get the fruit to set well.

Mr. Laughton recommended Wilson's Albany as a very prolific variety, stating that he had been successful in obtaining an average crop from it where the pots were plunged in the border of a graperly, and where but little extra care was bestowed upon them.

There was some farther discussion, principally conversational, in which all agreed that if forcing the Strawberry were deferred until about the first of March it would be attended with more success, as from that time more light and air can be admitted than is practicable at an earlier season.

Mr. Vair proposed as one of the subjects for discussion at next meeting the cultivation of the Camellia, which was agreed to.

On motion of Mr. Young, it was agreed that the cultivation of the Mushroom be also discussed.

After which the meeting adjourned until next monthly meeting, the third Monday of February.

HORTICULTURAL NOTES,

Made during a Tour in the British Islands and France, during the Summer of 1862.

Continued from page 27.

Leaving Sydenham and London with all their attractions, I proceeded to Sheffield intending to

visit Chatsworth, the magnificent seat of the Duke of Devonshire. The weather was delightfully fine; a pleasant ride of about twelve miles over the Moors of Derbyshire brings you to the park gates of the noble domain. Passing onwards through the magnificent park of ten or eleven miles in circumference, studded over with fine old specimens of the English oak, chestnut, and other trees, crossing on the way the fine three-arched-bridge which spans the Derwent beneath, from this point the road rapidly ascends to some distance, the views from thence are very fine. The expanded water with its crystal surface, the fine grounds clothed with a verdure of the most beautiful green, and covered with groups of deer and cattle, gave a peculiar charm to the scene. The house and gardens are open to the public, free of charge; you wait at the gate for a short time until a party is formed, who conduct you through the principal rooms and fine picture galleries, and landed in the flower garden, another guide conducts you through that charming department and the large Conservatory. The grounds and flower beds are kept in fine order and indicate much taste and skill both in design and execution. Passing onwards through immense masses of artificial and highly picturesque rocks, and fountains sending out their silvery spray, sparkling like brilliants in the sun beams, the noble conservatory 277 feet long, 123 ft. wide and 67 feet high is reached. It is a truly magnificent structure, the immense span and ridge and furrow of the exterior producing the most pleasing effect. The interior of the house is magnificent in the highest degree; the collection of plants can hardly be surpassed, and the broad carriage drive in the centre, the fine specimens of *Cavindish musas*, fruiting freely; many of the large *Palms* reaching to the top of the house. Ascending the stone stair-case covered with Ferns and mosses, you pass round the gallery, where a fine view of the plants is obtained, such as one will not readily forget. The kitchen garden is situated some distance from the house of about twelve acres in extent. It contains extensive ranges of forcing houses, also detached houses for the cultivation of particular varieties. Mr. Stewart, the head gardener, was very obliging and showed me through all the houses.

There are three ranges of vineries 246 feet each, in some of the houses there were fine crops of beautifully colored grapes; and a large range of peach houses bearing good crops of *Royal George Kensington* and other approved varieties. Pine Apples are also grown here in great quantities; I saw some very fine ripe fruit. Orchidaceous plants are grown to great perfection in span-roofed houses of considerable length. The house where the *victoria regia* is grown is a beautiful structure, 68 feet in length, 48 feet wide, the roof being on the ridge and furrow principle, in the centre is the large tank, 34 feet in diameter, in which the *Victoria Lily* was producing its enormous leaves and flowers in great

profusion. There are also four other tanks in the angles of the house, in which various kinds of water plants are growing. Near the gardens is the beautiful villa residence of Sir Joseph Paxton, a large well-proportioned building in the Anglo Italian style of architecture, with its fine green house and conservatory on either side.

What a lesson does a visit to this Ducal residence impart! Here is a collection on a gigantic scale of the choicest productions of plants, fruits and flowers from all parts of the world, arranged in buildings equalled in beauty only by their extent, adjacent to a mansion of noble aspect and proportions, abounding in works of rarest art, and all got together and sustained at the expense of one individual, a nobleman whom Horticulturists will not fail to honor to the latest posterity. It was here that Paxton entered as a poor boy to work in the gardens, and by the force of skill and character rose to the level of the Duke's companion, and has been invested by his sovereign with the order of knighthood, and made by the public a member of the British House of Commons! True, but few individuals can reach such extraordinary distinction, but let every young gardener, however humble his lot, bear the principle in mind that talent and perseverance, when backed by good character, will always lead to promotion.

Returning to Sheffield, I paid a visit to the nurseries of Messrs. Fisher, Holmes, & Co., at Hansworth about four miles from the town, just far enough in the country to grow plants free of the Sheffield smoke. I think this is one of the best provincial nurseries in England. They have large ranges of houses and grow an extensive assortment of stove and green house plants; they also grow all the new and fancy florists' flowers, and are very particular to keep the names correct. They flower all new plants before offering them for sale to prove their correctness of color and name. I purchased from them a very fine collection of Pelargoniums, Fuchsias, new scarlet or zonal geraniums, Dahlias, and other plants which I hope to flower the ensuing season. The out-door department embraces every variety of nursery *stuff* grown in England; their prices are very moderate and they are well acquainted with packing plants for the American market.

Before leaving England I had an opportunity of visiting the Botanic Garden of Liverpool, which is very attractive. The present head gardener has displayed great taste in laying out the flower beds, and arranging color to give effect. The show of flowers in the different departments was really beautiful. There is also an excellent range of houses, all filled with fine specimens of new and rare plants. Amongst the orchideous plants I noticed a very fine specimen of the *Stanhopea Aurea*, in full flower; several varieties of *oncidium*, full of bloom, *Mantisia Saltatoria*, called opera girls, from the curious resemblance the

flowers bear to ballad dancers. Another remarkable plant, the American Fly Trap, has appendages at the points of the broad foot stalks of the leaves, resembling a common rat-trap, which effects the purpose of catching flies or other insects that may alight on them. The collections of Camellias, Azalias, hot and green house plants, are very extensive and well attended to. The botanic department (proper) of the garden contains a very large collection of plants, the different natural orders are contained in separate beds formed on the grass with their names respectively placed at the end of each bed. The gardens are open to the public free of charge. The large ornamented park outside of the gardens affords a pleasant place of recreation to the public.

Birkenhead Park opposite Liverpool designed by Sir Joseph Paxton, and formed under his inspection by Mr. Kemp, is a delightful retreat from the smoke and bustle of the city. The grounds are capacious, and the manner in which they are arranged in relation to water, drives, &c., renders them peculiarly intricate, affording an endless variety of forms, every few yards presenting fresh scenery for the delighted eye to contemplate and admire.

Mr. Kemp is the author of the best modern work on landscape gardening, and is extensively employed as a professional. He is still the agriculturist of Birkenhead Park, and the management certainly reflects on him great credit. The parks and public promenades now so common in most of the principal cities and towns of Britain are among the principal attractions of that delightful land.

JAMES FLEMING.

(To be continued.)

Veterinary Department.

ON HORSE SHOEING.

On Thursday, 22nd ult., MR. ANDREW SMITH, Veterinary Surgeon to the Board of Agriculture of Upper Canada, delivered the inaugural lecture to the course on Agriculture and Veterinary art, now in course of delivery to a special class, in Agricultural Hall, in this city. The attendance was numerous and respectable. Col. E. W. Thomson, President of the Board, introduced Mr. Smith, and made a few observations explanatory of the nature and objects of the lectures. Mr. Smith commenced by giving a familiar exposition of the anatomy and physiology of the

horse's foot, from prepared specimens of the different parts, and proceeded as follows:—

Having thus briefly given an outline of this most beautiful and complicated organ, you will now be able to understand how such a delicate structure as the sensitive foot is preserved, and enabled to sustain the weight which is constantly being brought upon it, in galloping, leaping, drawing, &c. When man takes the horse and subjects him to the changes incident to domestication, when macadamized roads and causeways are substituted for soft lawns and pastures,—we find that the hoof itself must have some artificial protection, to prevent it being worn down, as well as to enable the animal to perform the work required of him.

Accordingly we find, that, from a very early period, a covering in the shape of a shoe was provided for the hoof, so as to protect it from the tear and wear to which it is necessarily exposed in travelling.

Archæologists have paid but little attention to the history of horse shoeing, consequently we find it difficult to determine the precise time when horse shoeing was first practised.

The Romans, we are told, used a covering, probably woven of hemp or rushes, which enclosed the whole foot, and was tied by a cord around the fetlock—this however must have been inconvenient and troublesome, as they would require to be removed repeatedly in the course of a journey; something more durable had to be substituted, so we find that mention is next made of iron shoes. Writers are not agreed as to the exact manner in which the Romans attached these iron shoes to the horse's foot; some suppose that they were fastened by means of a leather sock, which was bound round the foot by a thong of the same material. Others again suppose that they were acquainted with our modern methods of attaching them, and this last opinion is in some measure confirmed by the discovery of old horse shoes in some of the Roman remains in England, having the nail holes perfect and of a square shape.

It is evident that the Britons had some sort of protection for the foot of the horse, either at the Roman invasion or soon after, from their having a name to it;—they called it *Pedol*, from the Celtic *Ped*, a foot.

Some suppose that horse shoeing in Britain dates from the Norman conquest. This idea very probably arose from the great importance which William the Conqueror attached to Farriery. It is not so much my intention to enter into the history of the art as practised by the Ancients, as it is to bring before you the most modern improvements, and point out the plans which I consider the best.

In applying a shoe to the foot it should be made not only so as to protect the foot against tear and wear, but likewise so as not to injure the foot itself by bruising the sole. A great deal has been written and much more said, as to

which is the best method of accomplishing this object. It would be useless for me to describe the many different plans which have been invented, as almost every country has its own plan. But that which is now become most general, and which is found to answer all purposes best, is the *common seated shoe*, which was first proposed and made by Mr. Osmer, and somewhat improved by Morecroft. It is made of the same breadth all round, presenting a flat surface to the ground, except the fullering for the nail holes around the margin,—the upper surface, or that on which the foot rests, is made flat round the outer margin for the crust to rest upon—this flat part, (the seat) being broader at the heels to support the heel of the crust. The inside of the web is well bevelled out, and made concave, so as to allow space for the descent of the sole; it is generally secured by from seven to nine nails; that is when nine, 4 in the inside and 5 on the out; and when seven, 4 outside and 3 inside.

Since the time of Osmer and Morecroft, a great many have written on the subject and proposed different forms of shoes, each possessing their own advantages, but none I think surpassing the seated shoe for general purposes. This is the shoe recommended and used by Professor Dick of Edinburgh, who has bestowed a great amount of attention to the shoeing of horses. In his manual of Veterinary Science he says:—After a personal experience of nearly fifty years in the service of the profession, commencing with the practical art at the anvil, and pursuing a long course of anatomical study, and being brought into daily contact with the horse, through practice, and clinical inspection, and otherwise, both in a sound and unsound state. I have come to the conclusion that the whole art of shoeing consists in applying a shoe so that it will serve as a defence to the shoe without injuring it—this is best done by what is called a seated shoe. Among those who have written on this subject, besides the above named, may be mentioned: St. Bel, Coleman, Bracy Clarke, Goodwin, J. Clarke, of Edinburgh, James Turner, and more recently Mr. Miles, Stewart and Col. Fitzwygram. We will touch on some of their plans when we come to speak of shoes for special purposes.

I have here what I consider a fair specimen of the seated shoe. The fullering should be made coarse, that is, not too near the margin, else the nails will have to be driven obliquely inwards and upwards, so as to get them high enough. This is apt to lead to pricking, (that is penetrating the quick with the nails, or the sensitive parts are readier bruised by the shoulder of the nail. This is an error into which horse shoers are very apt to fall; in fact, in many cases they are driven to it, as gentlemen who do not understand the principles of horse shoeing, sometimes find fault with the fullering being coarse,—thinking that the shoe is badly made. When pinched coarse they are easier driven.

We now come to a part of our subject which has been largely discussed, viz., the number of nails required to hold the shoe on the foot.—I believe myself, the fewer the better; that, no one can doubt, but I think no number can be specified. For it is evident that the great heavy shoe of the waggon horse must require more nails to hold it on than the light made shoe of the lady's pony.

Every one who has any experience among horses, know that some feet will hold the shoe firmly on much longer than others; one horse will retain his shoes from two to three months, while, perhaps, his mate requires his shoes fastened every fortnight—you must be guided by circumstances, by the foot you have to shoe, the kind of shoe you have to apply, and the work the animal is to be engaged in.

About forty years ago when contraction of the foot was thought to be the cause of the lameness known as "groggy lameness," almost every veterinary surgeon experimented to discover the cause of contraction. Bracy Clark came to the conclusion that it arose from the fixed condition of the foot produced by the nails, to obviate which he endeavored to dispense with the nails altogether. He introduced a Russian shoe, which is made with a band of iron clenched on, and made so as to encircle the foot, and is fixed by a catch in front to prevent it slipping off. This, as well as some other experiments of the same nature, proved quite unsuited to our roads. Mr. Miles, in his work on shoeing, gives a number of experiments which he made on the subject of nailing. He came to the conclusion that for all horses five nails are sufficient. Lieut. Col. Fitzwygram says that five nails are sufficient; three on the outside and two on the inside. I think that for heavy horses eight nails are needed to hold the shoe firmly on; that is four on each side,—for light horses seven and ponies six.

The nails on the inside should be placed well towards the toe, and those on the outside placed the toe nails opposite the second nail on the inside, and the remaining three divided evenly towards the heel; but of course when the foot is broken, they must be placed where they can be best got in.

For horses used for heavy draught, the heels should be turned down or what is termed calkins raised on the heels, which gives the horse a firmer catch of the ground, and prevents slipping. The power of the animal is much increased by having a toe, that is a piece of square iron welded across the toe of the shoe. Many eminent men denounce calkins altogether because "they interfere with the fair and level bearing of the foot on the ground," because they remove the frog from that degree of pressure which is necessary to preserve it in a healthy state, and enable it to perform its functions." Some also suppose that they increase the tendency to sprains and spavins. Shoeing at the best is an evil, but it is a necessary one, and calkins may also be an evil, but we find it advantageous to use them,

because we can increase the animal's power greatly by their use. In fact we find that these objections are more theoretical than practical; for we have horses with as good feet and as sound limbs that have been shod with calkins as those which have been shod without. For saddle horses and horses used only for light work, calkins are unnecessary. For light horses I would advise the shoe to be made plain, of the same thickness all round, and the heels nicely rounded off; it will be found advantageous to turn up the toe of the fore shoe, which will lessen the leverage on the back tendons, and consequently the liability to strains, and it will break the concussion and prevent tripping or stumbling.

We come now to a most important part of our subject, viz: the preparation of the foot for shoeing.

There is no part of the art of horse-shoeing which is so easy to understand as how the foot should be prepared for the shoe, and there is none more important. Yet it is in preparing the foot that the greatest errors are committed and the most mischief done.

Great diversity of opinion exists as to whether the sole should be pared or not. One high authority directs "the crust to be levelled with the rasp, so as to present a level bearing for the shoe. The sole to be moderately thinned so as to preserve the elasticity and natural action of the parts; the rags or loose parts of the frog only to be cut away." Another authority says, "to thin the sole till it yields to pressure from the thumb." Whilst another equally good authority says of the sole; "It is the natural protection of the delicate internal parts, is infinitely superior to the leathers and pads substituted for it; and if left in its natural integrity will protect the animal from many a bruised sole, and his owner from many a break down."

I concur with the last writer in saying that the sole ought not to be touched in the *healthy foot*. For instance take a colt that has never been shod, and I say never let a knife touch his sole, if you want to keep his foot strong and sound; nature has provided that sole to protect the delicate internal structure.

The horse was intended to run, not on macadamized roads but on the soft grassy plains. If such protection is necessary in his native wilds, how much more is it necessary on our hard stony roads?

It is often advanced against the non-paring of the sole that it becomes thick and destroys the elasticity of the sole, and acts as a foreign body, bruises the sensitive sole, and so produces lameness. Such undoubtedly is often the case; but why is it so? Is it not because the foot has been pared and pared at every shoeing, thinned so as to yield to the pressure from the thumb. What else can be expected than that the sole will become tender from being thus exposed? If it yields to the pressure

sure of the hand, how much more will it yield to the pressure of a stone, when the whole weight of the horse is thrown upon it? Now this must be constantly occurring when the natural protection is removed, and frequent bruises must in the end render the sole so tender, that even its natural thickness will cause pain and lameness, and consequently necessitate its regular removal by paring, and the substitution of leather and stuffing.

Thus it is that paring has become necessary in some cases:—but why render it necessary by beginning at all? Why not allow the animal the protection for his foot which nature has given him?—Some will say,—How is the superfluous horn to be removed, if not by the knife? Nature has arranged the fibres of the sole in transverse layers, which exfoliate in scales or flakes, in due time;—the under layer pushing off the upper; which till thrown off acts as a covering to the under layer, and preserves its moisture, so that although the outer layer may appear hard, the under layers are still soft and elastic.

The frog must never be touched except, perhaps, to cut away the loose rags, and even that may be unnecessary. The crust should be rasped down level, the old stubbs carefully removed, and the toe shortened; the heels should be left strong and the bars must not be touched with a knife.

The foot being thus prepared, the shoe is now to be fitted. It must never be applied very hot. However a little heat is generally necessary for the shoe to get a level bearing. It must lie closely on to the crust at every part, except at the heels, which may be slightly sprung.

In good feet the nails must not be driven too high, the hold of the nails should be solid and good, and as even as possible. The rasp should not be used to the clench, except to shorten it, if too long, but it must never be weakened. The hoof should not be furrowed to bury the clench in, but the clench turned down full strength, and well hammered down, which can always be done if the crust is not spoiled by rasping. The use of the rasp to polish the outer wall of the hoof must be interdicted, as it leaves the crust weak, porous and brittle, by removing the external unctuous covering of the crust, and consequently predisposes to sand crack, &c. In cases where the shoes have been kept on too long, it is frequently necessary to use the rasp to remove the superfluous hoof, so as not to allow it to project beyond the shoe, but in no case allow it to be used above the clenches. To preserve the feet in good condition the shoes must be removed every three weeks or a month. It is advisable to have new shoes at every shoeing, as they are generally more comfortable. When the shoe is worn for a great length of time, the nail holes become wide and the seating gets hollowed by the friction of the crust.

Having this hurriedly glanced at the principles of shoeing in general, I will now make a few remarks on shoes for special purposes.

1st. To prevent slipping on the ice. For this there are a great many plans in use—the most common is to sharp the calkins and tips on the toes;—the outside heel should be sharpened transversely, and the inside one longitudinally, so as to prevent cutting the other foot, and also prevent lateral slipping.

2nd. To prevent interfering, cutting, or brushing. The shoe must be kept fine on the inside, and the margin rounded off; this will prevent it in slight cases, but in bad cases the nails must be placed around the toe and outside, so that the inside might be kept fine, and there will be no clenches, which frequently are the cause of the cutting, by being raised. The crust may be allowed to overlap the shoe a little, the inside heel should be raised by being thickened, and the outside heel kept low—in this way the fetlock is thrown more out of the way of the other foot.

I have here a shoe for the hind foot which is found effectual, even in the worst cases, when properly fitted. It is made you will observe similar to the common feather-heeled shoe, except the nails are round the toe, and the feather rises from the inner margin of the heel. By the use of this shoe, when properly made and fitted, the boot may, in most cases, be dispensed with.

In shoeing to prevent interfering, it is necessary that the farrier should know what part of the shoe cuts—this may be known by binding a piece of cloth round the fetlock, and rubbing it over with pipe clay; then by trotting out the horse, the mark will be seen on the shoe at the place where it touches, which must of course be kept closer. For speedy cut the same principle should be observed.

For tripping or stumbling—the toe must be shortened, and the turned up toe shoe applied. This is a system of shoeing which Mr. Hallen, V.S. to the Inniskillen Dragoons, has practiced in the army for about twenty-six years. It certainly has many advantages besides preventing stumbling. It removes a great amount of leverage from the tendon, consequently, in a great measure, it prevents strain of the tendon; it also breaks the concussion which the foot has to sustain with the ordinary flat shoe. Lieut. Col. Fitzwygram, directs it to be made thus:—Let the shoe be made with a narrow web (three-fourths of an inch) of even width, except at the heels, flat towards the sole, concave towards the ground.

Turn up the toe of the shoe, (nearly from quarter to quarter) on the horn of the anvil. The degree to which the toe is to be turned up is to be regulated by what you find necessary in each horse to make the wear of the shoe (nearly) even all over. A simple method, and one which in some cases answer very well, is to chamfer the toe of the common shoe over

the heel of the anvil; but the most effectual plan is the turned up toe.

Clicking and forging, are the names given to a habit common to young horses, of striking the toe of the hind foot against the ground surface of the fore shoe, which produces a disagreeable clicking noise. It is caused by a quicker action of the hind than the fore leg, in general the noise is all the harm it does, but in some cases accidents happen by the toe of the hind shoes catching the inner margin of the toe of the fore one. This can seldom be wholly got rid of, but may always be palliated by proper shoeing.

The fore shoe should be made concave, so as to prevent the hind shoe catching in it; the hind shoe should be kept well back and instead of one clip immediately in front, it will, in this case, be better to have two, one on each side of the toe. By this means the shoe can be kept further back and the toe can be left to project over the shoe.

Shoeing for corns. The bar shoe—or three-quarter bar is the best. Every person is familiar with the bar shoe, but many horse shoers misunderstand its use. From mistaken notions about the frog they seldom give it the pressure which it is intended to receive by the bar shoe, the bar must rest on the frog so as to remove the pressure from the heels.

SCOURS IN SHEEP.—In case of their being thus attacked, a small dose of castor oil should be given to remove any offending matter from the bowels, after which four grains of opium and one oz. of chalk, and then put them upon dry food.

TO CURE A FOUNDER IN A HORSE.—The secret of curing founder is to commence at an early stage of the disease. A writer in the *S. W. Farmer* recommends bleeding first thing, then make your horse swallow about a pint of salt, and bathe his feet in spirits of turpentine; and it is asserted he *will be well in one hour*.

RECIPE FOR THE HOVEN IN CATTLE.—The Hadleigh Farmer's Club, recommends the following recipe for blown or hoven cattle: 1 lb. gaulther salts, $\frac{3}{4}$ lb. of treacle, and 1 oz. of ginger, mixed with one pint and a half of warm water. Powerful stimulants, such as ammonia, are also recommended.

Editorial Notices, &c.

BLACKWOOD'S MAGAZINE, FOR DECEMBER; Leonard Scott & Co., New York.—We regret to learn that the destruction of the establishment of these enterprising publishers by fire has been the occasion of the delay of the appearance of the concluding number of *Blackwood* for the past year. The friends of cheap and wholesome literature will, however, be

glad to learn that the re-printing of the leading British Reviews will be continued as heretofore, and will be characterised by the promptness and accuracy which have for so many years characterised Messrs. Scott's establishment. The current number of *Blackwood* is full of interest and attraction; the article on "British North America" should be carefully read by all, at this juncture especially, who feel an interest in the safety and prosperity of these important Provinces. This is a good time for subscribers to commence taking these cheap and valuable publications. *Blackwood*, \$3 a year; the same for each *Review*. But all four Reviews, with *Blackwood's Magazine*, are offered at the marvelously low price of \$10!

THE HORTICULTURIST AND JOURNAL OF RURAL ART: Edited by Peter B. Mead and G. E. Woodward, 37 Park Row, New York.

THE GARDENER'S MONTHLY AND HORTICULTURAL ADVISER: Edited by Thomas Meehan, and published by W. G. P. Brinckloe, 23 North Sixth Street, Philadelphia.

We have received the January number of these two excellent periodicals, both of which continue to maintain the high position they have won, notwithstanding the unhappy troubles which still afflict our American neighbours. The *Horticulturist* is an old servant in the, we were going to say, field, or rather garden; though the mere farmer may learn much that is valuable from its well-filled pages. It was commenced in 1846, and for many years conducted by the celebrated Downing, and is still as fresh and instructive as ever. The *Gardener's Monthly* has just entered on its fifth year, and has kept pace with the progressive advances of the Horticultural art. From its pages the practical man cannot fail to gather a valuable mass of information. Its price is \$1 50 per annum; that of the *Horticulturist* being \$2. A considerable deduction is made from the price of both by clubbing. We can conscientiously recommend either of these periodicals as fully up to the science and practice of the day, and that any one interested in the subjects of which they treat, would find it greatly to his advantage to take both.

TORONTO MARKET PRICES.

TORONTO, JANUARY 31, 1863.

Fall Wheat, per bushel.....	\$0 92 to \$0 95
Spring Wheat, "	82 " 85
Barley, "	90 " 1 00
Peas, "	54 " 56
Oats, "	40 " 42
Rye, "	56 "
Pork, per 100 lbs.,.....	3 60 " 4 12 $\frac{1}{2}$
Beef, "	4 00 " 5 00
Mutton, "	3 00 " 4 00
Potatoes, per bushel.....	55 " 65
Apples, per barrel.....	80 " 1 25
Turnips, per bushel.....	18 " 20
Onions, "	1 25 " 1 50
Fresh Butter, per lb.,.....	15 " 17
Tub Butter, "	12 $\frac{1}{2}$ " 14
Eggs, per doz., packed 15c, fresh,	20c.
Turkeys, each	55 " 75
Geese, each,	40 " 50
Ducks, per pair	40 " 60
Chickens, "	30 " 40
Hay, per ton,	10 00 " 20 00
Straw, "	8 00 " 12 00
Hides, per 100 lbs.....	4 50 " 5 25
Calfskins, per lb.....	9 "
Sheep-skins, each	1 40 " 1 50
Wool, per lb.....	30 " 32

THE CANADIAN AGRICULTURIST
AND JOURNAL OF THE
BOARD OF AGRICULTURE
OF UPPER CANADA.

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EDITORS:

Professor Buckland, University College, Toronto. Hugh C. Thomson, Secretary Board of Agriculture of Upper Canada. Andrew Smith, Licentiate of the Edinburgh Veterinary College and Consulting Surgeon to the Board of Agriculture of Upper Canada.

All orders to be addressed to the Secretary of The Board of Agriculture, Toronto.

BOARD OF AGRICULTURE OFFICE.

Toronto, December, 1862.

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Aug. 30th, 1862.

6-mos.

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The course will commence on *Wednesday, January 21st* 1863, and continue for about six weeks. Three Lectures a day, and *no fees*.—The subjects treated of will comprise:—

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Agriculture in its relations to Chemistry, Geology, Mechanics, Physical Geology and Meteorology, Botany and Zoology, including Farm Architecture and Engineering, the valuation and management of Landed Property, with special reference to Canada.

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A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

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[POST FREE.]

THE
Canadian Agriculturist
AND
JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV.

TORONTO, MARCH, 1863.

No. 3.

THE DESTRUCTION OF WEEDS.

That weeds constitute the greatest barrier to agricultural improvement, and the profitable employment of farm capital, must appear self-evident to every one having a practical acquaintance with the subject. Some of the best yielding wheat soils twenty years ago, both in Canada and the neighboring States, have, in consequence of over cropping and negligent culture, become so much exhausted and filled with the seeds of the different varieties of weeds, as to be wholly incapable of yielding a remunerative crop; and no inconsiderable portion of such lands may now be regarded, for all practical purposes, as in a state of wilderness; not occupied, unfortunately, with stately forest trees, but with various species of pestiferous weeds, the bane of all successful cultivation. Even on lands where weeds have not as yet obtained so complete an ascendancy, their presence indicates a low and slovenly system of culture, entailing annual loss to the farmer, and through him to the public, of an aggregate amount, which, if it could be correctly ascertained, would appear really frightful. Every weed, it should be remembered, that is suffered to grow and mature, robs the cultivated crop of a certain amount of food, lowers the stamina of the soil, and operates most seriously against any improved and profitable system of cultivation.

In order to eradicate weeds effectually they should never be allowed to perfect their seeds. A strict adherence to this rule would, in a

comparatively short time, rid the farm of all such as are annual or bi-ennial. Those which propagate themselves by roots must be removed by careful pulling, and deeply stirring the ground by exposing the rootlets to the action of heat and air, during the operation of summer fallowing. It is well known to vegetable physiologists that plants in general cannot live without leaves; and that to denude weeds of their leaves whenever they make their appearance, will so diminish their vigour as ultimately to cause them to perish. All kinds of thistles must sooner or later succumb to such treatment. Docks, mulleins, &c., may the most readily be got rid of by pulling them up by the roots, when the ground is in a moist state. The yellow dock is rapidly spreading in some localities by allowing it to run to seed, and great care should be taken to pull the young plants before they become matured. Bur-docks are often found occupying the best grounds, to the complete exulsiion of everything beside: these can only be eradicated by completely up-rooting them. The destruction of this and other bur-bearing plants is a matter of great moment, not only to the productiveness of cultivated crops, whether grass or grain, but also to the comfort and thriftiness of sheep, which are always incommoded and injured thereby.

If farmers would make a point of cutting down bushes and weeds as soon as they attain to any considerable height, the appearance of their holdings would not only be greatly

improved but their crops would receive a proportionate increase. It is physically impossible for any field to bear two crops—one of weeds and the other of grain—at the same time; the former will be certain to obtain the mastery of the latter. The angles formed by our zig zag fences are, by neglecting to mow them in sufficient time, prolific sources of weeds, as though they were specially designed and set apart for the purpose. All such places should be carefully and periodically examined and kept clean; and the landsides and borders of woodlands ought not to escape a similar method of supervision, and no weed should any where be allowed to ripen its seed. By steadily following out such a course the annoyances and losses of the farmer would diminish as his crops and profits increase.

Few are aware how strangely prolific are these pests. Professor Buckman, by the most careful experiments, ascertained that a single plant of the common groundsel will produce 6,500 seeds in one summer. The graceful corn-cockle sheds 2,600 productive seeds; and the red poppy, which diversifies the corn fields of the chalk and limestones of England, produces 50,000 minute but vital seeds. The sow-thistle branches out into the wind its 20,000 flossy parachutes, bearing the germinating car-like speck, to undulate with every breath of air and take root far away. The common dock lets fall its 13,000 solid grains, each destined to shoot down an exhaustive top-root into the soil. Dandelion produces nearly 3,000 seeds, each furnished with an inimitable apparatus for a distant flight. The cow parsnip, if neglected, will produce 5,000 plants; the meadow scabious, 4,000; the May-weed, 45,000; the daisy 13,500. Nor is it sufficient to cut down their bearing plants, and leave them to dry on the dung heap or wither on the ground. The sap in the stem and leaves of the cut-down plants still mounts up to and nourishes the seed. Nor is their wondrous vitality less remarkable. If the ground be trenched three or four feet deep, there will appear upon the surface a dense crop of weeds, of a different kind from any observed before. They may have been hidden for ages, but when exposed to the air and rain and sun, the little speck of vitality within germinates, as if the seed had freshly fallen! No limits can be assigned to

the vital durability of some kinds of seeds, when buried deeply in the ground, and not stimulated by the action of heat, moisture, and atmospheric air.

It is intolerable that an indolent farmer should be permitted to poison his neighbor's fields. If he is lost to all sense of the injury he inflicts upon his own produce, he should be coerced to extirpate these enemies for the sake of others, whose property and labour are deteriorated by his carelessness. Alexander II. of Scotland denounced that man to be a traitor "who poisons the King's lands with weeds, and introduces thereby a host of enemies." And it is said that whoever was found to have three heads of the common starwort among his corn, was fined a sheep for each stalk. In Denmark the farmers are bound by law to destroy the corn-marigold; and in France a farmer may sue his neighbor who neglects to eradicate the thistles upon his land at the proper season. In Australia a similar regulation has been imposed by legislative authority, with, it is said, the most beneficial results. In Canada, we believe, enactments have been issued against allowing thistles to ripen on the road-sides and exposed public situations, both from the legislature and township corporations; and it is passing strange that such important and beneficial regulations, on the proper observance of which both private and public wealth is so closely dependant, should in many districts become practically inoperative. It is high time that some firm stand should be taken, not only against thistles, but pigeon weed, and the whole tribe of farm pests of this nature, forming as they do insuperable barriers to Agricultural progress, and consequently to the increase of wealth and national prosperity.

SKETCHES OF THE DIFFERENT BREEDS OF CATTLE.

Durhams or Shorthorns.

(Concluded from page 20.)

Besides the very eminent breeders referred to in a former paper, others of scarcely less note appeared in the field, and to the result of their labors the general elevation of the present race of Short-horns is owing; nor have they degenerated in the hands of their successors. There

have never been wanting in England and elsewhere, a number of intelligent and persevering breeders, constantly increasing of late years, whose respective herds have gained great and deserved celebrity.

The Durham, or Teeswater breed, it has been well remarked by a competent authority, differs nearly as much from the older cattle of the Tees, as the Dishley breed of Long-horns from the older race from which it was derived. The height is less, but the trunk is more round and deep; the limbs are shorter in proportion to depth of body, and the chest, back, and loin, more broad, so that with less apparent bulk of body the weight is usually greater. The skin is light-colored, and the hair reddish brown or white, either separate or mixed. The muzzle is flesh colored, and rarely black, the appearance of which color on the skin indicates the revival of a character of the older varieties, which modern breeders study to exclude. The horns are shorter than in the former breed, light colored, blunt, and sometimes laterally flattened. The skin is soft to the touch, the general form square and massive, the shoulder upright, and the hind quarter large. The uprightness of the shoulder produces a hollowness behind, which does not exist in the same degree in the Devons, the Herefords, and other varieties allied to them. The uprightness of the shoulder is regarded as a defect, but it would be more correct to say that it is a character in harmony with the squareness of form distinctive of the breed. Although Colling preferred cattle of a medium size, yet the breed being derived from one of great bulk of body, there is a constant tendency to the production of large animals. The breed communicates its character readily to all others, and the first progeny, even with races the most dissimilar, is usually fine. The females retain, in a considerable degree, the properties of the Holstein race, in yielding a large quantity of milk, in which respect they greatly excel the Long-horns, the Herefords and the Devons. In the property of yielding milk, however, the new breed is inferior to the older and less cultivated one, shewing that refinement in breeding, and the greater tendency to produce fat, are unfavorable, as a general rule, to the secretion of milk. Individual cows, indeed, are found to retain the milking properties of the older race, but this is an exception to the common result. The oxen are eminently distinguished by the

property of arriving at early maturity of muscle and fatness. Great numbers of them are now disposed off at the age of about two years, in the highest perfection, and of a weight at which no other cattle in Europe arrive at the same age.

There is in the present improved Short-horns a union of many qualities, once deemed incompatible: early maturity, quick feeding, and that to a great weight, an abundance of inside fat, and meat of a fine grain, while the cows often prove plentiful and steady milkers, and fatten rapidly when dried; these are the characteristics of the breed. Many improvers, it is true, look rather to the grazing properties of these cattle, and forget their value for the dairy; they esteem them in proportion to their early arriving at maturity, and their aptitude to fatten; and selecting their breeding stock with such views, the milking properties of the cows often become in reality diminished. But this is to develop one excellency at the expense of another, and that without necessity; for in this breed, as has been abundantly found, both qualities can exist, not of course exactly at the same time, for the milking cow does not fatten until dried, but in subjection one to the other. If indeed the milk yielded by the improved Short-horns be somewhat less in quantity than that given by the old unimproved strain, it is generally of far richer quality, and returns more butter in proportion. We have it on good authority that four gallons of milk have been yielded, morning and evening, by the highest bred Short-horns, and some have even given more; and these very cattle have proved, after having been dried and fattened, admirable in the carcass. To the dairy farmer, therefore, many of the Shorthorns are as valuable as to the grazier; and indeed it is with cows of an improved Short-horn breed, from Yorkshire or Durham, that the great dairies for the supply of London with milk are stocked. The Yorkshire cow indeed has always been a favorite with the London dairymen; but formerly, when dry, she fattened slowly, consumed much food, and therefore sold to a disadvantage. But the improved breed fattens with surprising rapidity, and whether the dairyman keep his cows one year or three, and then sells them, or feeds them for the butcher, they annually return a handsome profit.

The Shorthorns of Holderness, and, indeed, of Yorkshire generally, owe their modern improve-

ment to judicious crossings, and especially to the influence of the Teeswater and Alloy strains. It must not, however, be supposed that the old breed is universally improved; on the contrary, many of the dairy farmers give the rough breed the preference, partly from prejudice, and partly because the milking properties of the improved breed have been more or less sacrificed to the development of a constitutional tendency to accumulate fat. Mr. Youatt, referring to this subject, well observes: "Experience has gradually established the fact, that it is prudent to sacrifice a *small* portion of the milk to assist in feeding, when the cow is too old to continue in the dairy, or when, as in the neighborhood of large towns, her services as a dairy cow are dispensed with at an early age. This cross being judiciously managed, the diminution of milk is so small, and the tendency to fatten so great, that the opinion of Mr. Sale is correct;—"I have always found in my stock, that the best milkers, when dried for feeding, make the most fat in the least time."—This is a doctrine which will be best understood and universally acknowledged by and by, for many of the improvers of the Shorthorns have but half done justice to their excellent stock. He would deserve well of his country who, with skill and means sufficient, would devote himself to the illustration of this point."

It is a remarkable fact that the Shorthorn cow improves both in the quantity and quality of her milk as she grows older; that is, a cow six years of age is superior, as a milker, to one of three or four years of age; and her milk will yield more butter in proportion. This rule, while holding good in general of most other breeds, appears from the careful observations made by several breeders to apply in a more forcible manner to the Shorthorns.

This highly cultivated breed extended from the district of the Tees, as from a centre, as soon as its value became known. It quickly spread northward, all through Durham and Northumberland, into the valley of the Tweed, and in later years, it had extended northward, through the eastern lowlands of Scotland, to the Pentland Firth, and is now mingling with the native breeds. The Shorthorns can now be found existing in purity and large numbers in Aberdeenshire and other northern counties, and also in the Orkney Islands, where the

Swedish turnip is raised in great abundance and perfection for the purposes of feeding. This celebrated breed soon extended southward, through Yorkshire, where it was cultivated on the largest scale. The district of Holderness, as we have already observed, early obtained cows from Holland, and became distinguished beyond any other part of England, for the excellence of its dairy stock. Many cows of the Holderness variety are yet to be found, but generally they have been more or less mixed with the Durham blood. The effect has been to improve their form, but in many instances to impair their milking properties; nevertheless, the modern Holderness still stands in the first rank of dairy cows, and the great London dairies are largely supplied by them. The Durham breed extended likewise across the Humber, and was largely mingled with the cattle of Lincolnshire, and the neighboring districts. Individual animals are still to be found in the fens, with the clumsy forms, dark muzzle, and dingy skin of the former race; but generally speaking, the blood of the improved Teeswaters has been more or less infused into all the cattle of this part of England. Further, the breed has extended westward through Leicestershire and the midland counties, where it is either cultivated in a state of purity, or has been so mingled with the former breed as to modify or efface the Longhorn characters. It has taken root in Lancashire, Westmoreland, and other parts, where the Long-horned breed had been the most firmly established, and it has been carried to the counties bordering on Wales, and into the Principality itself, where the breeds allied to the Devon have been before cultivated. It has passed into the drier counties of the chalk in the south-east portion of England, though, perhaps, in smaller numbers than into the central and western counties. It has been transported to Ireland, and, in an incredibly short space of time, has effected a great change in the cattle of the breeding districts of that country. Being made to cross the native Longhorns, the first progeny is always found to be good, and this effect naturally leads the breeders to resort again to the superior race, so that after a time the traces of the Longhorns become lost.

Further, the extension of the pure breed has reached America, and the extensive British Colonies in the Southern Hemisphere. Some of the finest animals, from the choicest English herds, have been purchased of late years at enormous prices for Australia, where the breed continues to maintain its high position. In many of the States of the adjoining Republic, it has become firmly established; for many years an importing company has existed in Kentucky, whose operations have been attended by the happiest results. The names of Vail, Morris, Thorne, Allen, &c., of the State of New York, are familiar to the reader; and very recently American bred Shorthorns have been exported to England, where they have attained to a high position. In Canada and other British American Colonies, this world renowned breed has been cultivated with complete success. Among the early importers was Mr. Wingfield, of Guelph, whose herd came afterwards into the hands of Mr. Howitt, and from it many really good animals have been diffused over the Province. The late Hon. Adam Fergusson, of Wentworth, was among the earlier importers and improvers of Shorthorns, a vocation which he continued to pursue up to the recent period of his lamented death. The Wades of Cobourg, Mr. Arnold, of St. Catharines, and others, successfully followed the example, while Mr. George Miller, of Markham, Mr. Snell, of Peel, and, within the last few years especially, Mr. Stone, of Guelph, have, in conjunction with others not perhaps so generally known, contributed much to the improvement and extension of Shorthorns in Canada. The distinguished position which this breed has of late years occupied in the Provincial Exhibitions, fully attests its suitability to the climate and wants of the country.

THE TURNIP CROP OF LAST YEAR.

EDITORS OF AGRICULTURIST:—I would like to learn from some of your readers their experience in regard to the turnip crop of past season. Owing to the drouth of last May much of the carrot seed failed to vegetate, and the land had to be resown with turnips. Such was my own case with some six acres. The turnip seed came up finely, was pushed past the danger of the fly, and gave promise of a good crop. There were some in drill 18 or 20 inches apart, and thinned out to from 6 to 10 inches. The ground was well manured in the spring, plowed twice,

cultivated and harrowed several times. The ground had been to spring wheat the year before. But the turnips never came to more than half the size they should have been, and had long necks and large roots, to which there was sometimes attached a tuber something like a small rough potato. This disease I believe is called "fingers and toes." They were very tough in the flesh and of a particularly strong turnip flavour. I do not think that the time of sowing had any thing to do with these malformations, as some were sown at the same time as the carrots, (to mark the rows), some from the 10th to the 15th of June, and a few in July, but they were all of the same character, not that every specimen was so but very many of the whole lot were.

My own case was not the only one in this Township, but the same complaint is made by my neighbours. The seed was imported, I was told by the person who sold it to me, from England, by Mr. Fleming, of Toronto. Of course Mr. Fleming is not to blame, even if it were the fault of the seed. He could only test its vitality, not its quality. But it may be possible that as the seed business with this country has assumed some magnitude, dishonest growers may have raised seed from inferior or diseased roots and thrown it into the market. But I would suggest that every care should be taken to ensure a true article, or, what perhaps would be better, that every one should buy only a small quantity of imported seed and from the produce of it raise seed for the ensuing year. I sowed quarter of an acre with a white Swede, the seed of which was raised by Dr. Beadle, of St. Catharines; but which though, sown in the same field, showed none of the peculiarities of the imported seed.

R. N. B.

Niagara, Feb. 14th, 1863.

THE POTATO DISEASE.

EDITOR AGRICULTURIST:—In your issue for January, you have an article on the "Potato Disease" copied from the *Evening Times* over the signature of "A FARMER." He thinks it is owing to exhaustion of vitality in the tuber, and that the plant needs renewing by raising new varieties from the seed, and that they will be free for a time from the rot. If a FARMER will only try this experiment he will soon be cured of any such ideas. I have tried it and the first year fully one half rotted. The white fleshed and white skinned varieties, that promised to be the most delicious, were the most affected and in consequence rejected. The dark skinned yellow fleshed ones were rather better, and for some twenty sorts that were obtained from the seed not more than one or two will be worth propagating. The seed was taken from a field planted with different kinds, the "Peach Blow" predominating.

The Chilis he speaks of were most likely the "Garnet Chilis," which are a valuable kind of

potato and deserving the praise he gives them, but they will be found not to be invulnerable. The potato disease is almost without doubt established to be caused by a fungus, although some attribute it to an insect. Some potatoes by reason of a strong constitution are less liable to its attacks or better able to resist them, yet all are more or less exposed to the danger, and none are entirely free from it.

R. N. B.

Niagara, Feb 14, 1863.

Written for the Canadian Agriculturist.

DOTTINGS FROM MY NOTE-BOOK.

Upon each of the following brief notes a large article might easily enough be written, but brevity in such cases is generally more acceptable than extended observations.

1.—CATTLE AND PUMPKIN SEED.

Pumpkin seed have the evil effect of rendering milch cows dry. I was once led to believe that they were good for feeding milch cows, and commenced to feed them out to a cow, at the rate of half a bushel per day. At that time she was giving eight quarts of milk per day, but instead of this increasing the quantity it diminished it. I increased the feed to a bushel per day; still there was a decrease in the quantity of milk until the pumpkins froze up, when she did not give but four quarts a day. The cow did not fatten, and the reason for the decrease in quantity of milk I could in no way account for. I then took out all the seeds, when lo, the change!—instead of five quarts of milk a day I got nearly nine in a short time.

2.—SALT FOR HORSES FEET.

Common salt absorbs moisture from the atmosphere. Here it has been in some instances applied with great success, for keeping the hard bound hoofs of horses moist. The hoofs of some horses become dry and oftentimes crack, thereby rendering them lame, if the animals are driven on hard roads. By bathing the hoof and fetlock joint with a salt brine three times a day lameness from the above cause will be avoided. It is a common practice with some blacksmiths to rasp cracked hoofs in order to render them more tough, but salt brine is far superior to rasping for effecting this object.

3.—LOCKJAW IN HORSES.

Veterinary physicians pursue a method of treatment for this terrible malady which I never could commend; They can do nothing without blistering, clyster, &c., which rather aggravate than relieve the spasms that usually attend it. Death often ensues by this practice, and the disease has been held to be almost incurable. I have discovered a new system of managing this malady, and nearly all the cases in which I have applied it have resulted favourably. My plan consists of hot water packing

similar to that pursued in the "Water Cure" for the *genus homo*. As soon as the horse is observed to be affected with tetanus it is wrapt from head to tail in 4 or 5 pairs of blankets, which have been wrung out of warm water at a temp. of 200° Fahr. Allow the horse perfect rest and quietness for 2 hours, when warm water of above temp. must be poured along its back outside of the blankets, and another like period of repose allowed, and so on until a cure is effected. A thin gruel of flour, oat, or Indian corn meal may be given, when the animal's jaws are capable of being opened. Any farmer can apply this simple method himself.

5.—HONEY BEES.

From horses to honey bees may be "a step from the sublime to the ridiculous," but never mind, I pick my notes as they come.

About honey bees I always recommend that they should be covered up in the winter, giving only a small vent for the air. I find they live on one-third less food by so doing, and are quite as good as when otherwise managed. I may one day give the readers of the *Agriculturist* my entire original method of managing bees.

5.—MILK.

From investigations lately made upon the normal changes in cow's milk, I found that the quantity of fat contained in milk increases (according to the hour it is drawn) from morning till evening, whilst the whole amount of protein substances remain constantly about the same; the quantity of sugar appears to reach a maximum at midday. The specific quantity was always nearly the same, and from that no conclusion can be drawn about the constitution of milk.

Mabrus' method of preserving milk is very good. It consists in putting milk into a metallic vessel, which terminates at the top in a tunnel-shaped leaden tube; above the milk (in the tunnel-shaped expansion) is poured a thin layer of oil, to prevent contact with the air; the milk in the vessel is then heated from 167° to 176° Fahr., during about an hour, to expel the air, and, after cooling, the leaden tube is pressed together air-tight, then cut off above the point of compression, and soldered together. I have used this method for some time and find excellent.

6.—MANURING.

"The very worst way to apply manure is to spread it out on the field and have it exposed." So I once heard a Professor of Agricultural Chemistry say. He argued that this exposure caused a loss of ammonia by evaporation. But from my own practical experience and that of my neighbours, who have adopted my plan, I believe this statement highly incorrect. No loss arises from spreading manure on the surface of a field; on the contrary, if spread and allowed to lie until it is washed with rains, it is more beneficial than to plow it in at once. When

spread out in a field fermentation is stopped, and volatile matter ceases to escape. In the case of clay soils, I have no hesitation to say, that the manure may be spread even six months before it is plowed in, without losing any appreciable quantity of manuring matter.

7.—LIQUID MANURING.

I have practised this considerably on my farm, and find the trial to result in marked success. I collect the liquid manure of my farm in well covered tanks, puddled with clay, to prevent the loss or escape of the liquid. Each tank is divided by a wall into compartments, capable of holding each two or three months' supply. When the first is full the stream is turned into the second, and, by the time this is full, the first is fit for land. I always apply it in a fermenting state.

The fresh urine of cattle, &c., ought to be mixed with its own bulk of water, by which means the loss of ammonia is prevented, as also the caustic effects of urine on the land. Sulphuric acid or burned gypsum may also be added to fix the ammonia. One thousand pounds of urine contains sixty-eight pounds of solid rich fertilizing matter.

8.—MISCELLANEOUS.

Every farmer who can afford it should send his sons to a course of chemistry, (agricultural if possible) at a good college. Farmers should combine in every village, and raise a "Farmers' Debating Club," for mutual instruction in agricultural and other useful ideas. I started one two miles from my farm a year ago, and we now have farmers coming to the meeting (twice a week, when not busy, and oftener) who live at the distance of ten and twenty miles. We have a subscription of \$1 for those who can pay; this is for *life* membership. However, every one is admitted free and allowed to partake in the discussion. The members write out their ideas, and altogether we find our "Farmers' Society" benefiting every individual member who attends.

To be Continued.

WHY DON'T THE FARMERS WRITE FOR THEIR PAPER? STABLING COWS, SAWDUST FOR BEDDING, &c.

EDITOR OF THE AGRICULTURIST.—It does seem strange while the U. S. Agricultural papers are so full of correspondence, that the only Agricultural paper published in Upper Canada should have to make so many complaints to Canadian Farmers for not writing for their own paper. What is the reason? It has been said that people don't like to write for nothing and pay the postage too, but this surely can be no reason with any of the long list of farmers who are receiving every year a share of the money given by Government for the encouragement of agriculture. What is the reason then? Is it laziness? If not let some one that

knows the reason tell it with a view to a remedy.

You ask for facts and experience, I will give you a little in that way, and if you think it worth putting in the Agriculturist you can do so. I have been in the habit of tying my cows up in the winter. This year I did not take them in until December, they were fed in the yard, had a shed to go in when they chose, and water near by. After they were taken in and tied up they gave about one third more milk, fed the same as before, viz: hay in the morning, turnips at noon and straw at night,—except at the commencement of foddering before I got any straw thrashed, they had hay both night and morning—and let out to water once a day and immediately taken in again.

This winter I have commenced to bed them with sawdust and find it much better than straw for keeping them clean. They stand on planks raised a little above the floor with a view to keep them dry and clean, but notwithstanding all my care in bedding them with straw they would always be dirty. This winter as I said, I bed them with sawdust and they are almost as clean as they are in summer at pasture. My wife says it is a pleasure to go in to milk them now, they are so clean, and look so comfortable.

I am, yours, &c.,

J. W.

THE POTATO DISEASE.

LONDON, C. W., Feb. 1863.

EDITOR OF THE AGRICULTURIST,—DEAR SIR, —May I take the liberty to submit to you a few remarks upon a subject that concerns all of us. I allude herein to the sanitary condition of the potato and its treatment. I would beg it may be understood that it is not my intention to enter into any controversy, not only from the fact of my being a mere novice, but also from a desire to avoid contention. Notwithstanding all that has been written by those whose endeavours have been lent to explain the first cause of the potato disease, as also the cure of the disease, unfortunately nothing in reality has been made conclusive. That the malady at the on-set established itself in an epidemical form, into the fair fields of Europe, there is no doubt, and thousands of poor creatures had then starvation staring them in the face, in consequence of the direful ravages made by the plague that fastened its blighting grasp upon the poor people's principal food. And did they not some of them die of starvation in consequence? We know they did, and that the same disease now prevails both in Europe and in the greater part of this vast continent there can be no room for denial. The study of this most essential and important article of food, is very interesting, and should *now* occupy more largely the attention of the farmers in general, than has been the case.

As to the history of the potato we need not refer to that, further than to point to the feasi-

bility of obtaining, if possible, from its original source, a small number of real natural tubers, merely to afford renewed experiments, in relation to the existing disease. And there should be efforts made, *in time*, by every one who cultivates the potato crop, in order to arrive at a system whereby to lessen and check the disease as much as possible. The utter destruction of this malady in any particular country, and during any one year or season, would lead only to the miraculous. The theory advanced by some writers, whereby to destroy the potato disease by the production of tubers from the seed apple, is indeed very questionable. That tubers of a new or different variety may be thus produced is apparent, but since it is conclusive that the visitation is still endemic to the whole vast family of the potato, it *must* follow that renewed seed propagated in this way, will enter into life open to the same influences that are now attached to the parent plant.

The impression as regards the production from the seed of the plant, with a view to introduce a pure and healthful race, when first made upon the mind, led me to think along with others in favour of the experiment—but apart from such experiments that have been made, and their results—there remains in my opinion but one conclusive consideration, which is, that it would be just as reasonable to suppose, that the new-born child—because it is a new-born child—will thereby escape all or any of the endemical diseases to which the human family is liable, as to imagine that the potato produced anew from the seed, can be free from a disease to which its whole race have been predisposed during a lapse of seventeen years. That the root may be renewed, and in a measure improved in quality by the process there is no doubt.

In the year one thousand eight hundred and sixty, I had planted with potatoes about half an acre of light land; they were of three different sorts, viz.: Pink Eyes, Ohios, and a new variety called "the Prince Albert;" these were planted, each sort by itself. The crop in progress of growth received every attention, the yield was abundant, and in other respects large in size, sound, and of good quality. That season (1860) my attention was drawn to the very unusual quantity of seed apples that formed and matured, and I was induced to collect a great number of the largest of the berries, for experimental culture. However, as ill luck willed it, they were, after remaining a long time in state of supposed decomposition, mistaken for some useless compound, and thrown out of doors. In 1861, the same piece of land was put into culture of the carrot crop; and from the great care taken to subdue all kinds of weeds and anything that might vegetate, save the carrot plants, there was not even a solitary potato permitted to live from any of the few that might have been left in the ground the preceding year.

I have now to introduce a very interesting

phenomenon—if I may be allowed the expression in respect to the seed of the potato. I have stated that an unusual quantity of seed apples were produced in 1860. I have also declared that nothing of the potato kind vegetated in 1861. In 1862, the identical piece of land was a second time put under the carrot culture. Some few days after the carrot seed had vegetated, in looking through the drills, it was observed that an abundant crop of very diminutive potato plants had sprung up; and more so on those parts of the land where the Albert, and Ohio potatoes grew in 1860, and although the seed apples were seen in abundance on the plants of the Pink Eyes, but very few seeds of that sort seemed to have vegetated in 1862.

The discovery of these young seed plants afforded a wide field for experimental culture. In due time I selected a quantity of the most healthy looking young plants, and some of them were removed and transplanted to a *particular spot*, whence potatoes of a diseased character had been dug in the fall of 1861,—this step was taken with a view to ascertain if the contagion—if I may so term it—still lingered there. The other plants that were removed, were transplanted into various parts in the garden—the whole of them received similar attention during the summer, with respect to cultivation—as did also a great many more that were left in favourable places amongst the carrots, where they first vegetated.

When the produce of this seed crop was harvested I did not find the yield thereof as I had been led to anticipate, viz., "small potatoes of the size of marbles," but on the contrary some of them were extremely large—indeed those generated of the Prince Albert sort measured, some of them, as much as five inches long—there was no discernible disparity of colour in any of the tubers raised from the Prince Albert plants—but in shape there was seen a marked change in a few, some of which were quite round, whereas the parent stock is that of a very long potato. In respect to the produce of the Ohio plants, not only was there a disparity of colour observable but also an unmistakable new variety, of oval and round formed potatoes, and these of a clear white skin—the Ohio being naturally of pale purple. There is one thing I ought to remark, which is, the produce from the plants that were removed and transplanted was of superior description to that found under the plants that remained undisturbed, although the whole that were harvested received equal care in cultivation. This perhaps may be attributed to the death of some of the young tender roots caused in the act of transplanting them, and which would naturally tend to strengthen those that remained uninjured; and although the potatoes were not so great in *number*, they were much larger, and more fully formed, whereas those found under the plants that were left un-

disturbed were much smaller though of greater number.

Reference must now be made to the plants that were removed and transplanted to that spot wherein "potatoes of a diseased character were found in 1861." The unfavourable fact must be declared, that not only the symptoms appeared, but in a great degree, and a number of these tubers were found in a highly diseased condition. The fatal truth of a failure both in the usually planted tuber, and also in that of the young plants, placed there in a perfectly healthy state, is an important matter for consideration, and which I shall endeavour to explain.

To be continued.

DECLINE OF SHEEP HUSBANDRY IN THE STATE OF NEW YORK.

It is satisfactory to find that warlike operations are not occupying the whole of the attention of the American people. Agriculture and pastoral occupations, which should be their mainstay, still crop up occasionally in discussions and the public journals. Let us hope that the sword may soon again be converted into the ploughshare, and the industrial harvest of the soil may be reaped instead of the bloody harvest of warfare. We have lately received at the hands of Mr. Johnson, the secretary of the New York State Agricultural Society, a copy of a very interesting paper on Fine Wool Sheep Husbandry, read before the society last year by Henry S. Randall, LL.D., of Cortland Village, New York. The subject is an important one, and very elaborately treated, as may be seen from the following digest of the points dealt with:—The origin of the Merino; its varieties; its introduction into the States; the circumstances which have affected its success; the comparative profitableness of its varieties; the expediency of crossing between varieties, and the effects of in-and-in breeding; the proper mode of selecting a flock; the art of breeding; the present course of breeding in the United States; and suggestions as to the future of the fine wool husbandry there. These subjects are much too voluminous to be treated of in a short digest, and we shall therefore content ourselves with directing attention to the last, which is indeed that in which our readers are most concerned. The observations it may be remarked, refer almost exclusively to the State of New York.

Dairying seems to be wholly driving out wool-growing in the grazing portion of the State, and grazing cattle preferred to sheep on probably a majority of the grain farms. The remarkable decrease of the latter in proportion to the population is apparent from the census returns. In 1840 there were 5,118,777 sheep in the State to 2,428,921 persons. In 1860 there were but 2,617,855 sheep to a population of

3,888,728. Cattle in the same interval had rather increased. The weight of wool obtained was, however, about the same from the lesser number of sheep as from the larger, the clip of 1860 being returned at about 9½ million pounds.

While the vastly higher priced lands of England carry nearly two sheep for every inhabitant and within a fraction of 590 sheep for every square mile of territory, it thus appears that the State of New York has now less than one sheep to every inhabitant and less than 56 sheep for every square mile; and it further appears that the sheep have steadily decreased for twenty years, and are still continuing to decrease.

The explanation offered for this decay is; that the great flocks of the State kept for wool growing purposes anterior to 1840 were mostly of Saxon blood, and when they were abandoned as unremunerative in 1846, no other wool-growing sheep proper was left to supply their places. For the few improved American Merinos left in the county in the hands of breeders, comparatively large prices were asked. But the farmers were wholly disinclined to venture on any new and costly experiments in fine-woolled-sheep. The destruction caused among sheep by dogs has also essentially contributed to the prostration of sheep husbandry. It not only has inflicted serious, and, in the aggregate, enormous losses on the people, but it has of late years, as population and curs have increased, driven multitudes of persons out of sheep husbandry, and prevented still more from embarking in it.

Dairying took the place of wool-growing. It proved a steadily and highly remunerative department of industry. Dairying under the best circumstances is far more profitable than sheep husbandry with inferior or middling animals; but the best sheep are as productive as the best cows, and require far less labor. By means of the rapid increase of sheep, and the great facility of promptly improving inferior ones, they will stock a farm more expeditiously, and with far less outlay, than other animals. The ordinary processes and manipulations of sheep husbandry are also simple and readily acquired. On no other domestic animal is the hazard of loss by death so small. It is as healthy and hardy as other animals, and, unlike all others, if decently managed, a good sheep can never die in the debt of man. If it dies at birth, it has consumed nothing; if dies the first winter, its wool will pay for its consumption up to that period; if it lives to be sheared once, it brings its owner into debt to it; and if the ordinary and natural course of wool-production and breeding goes on, that indebtedness will increase uniformly, and with accelerating rapidity, until the day of its death. If the horse

or steer die at three or four years old, or the cow before breeding, the loss is almost a total one. If the cost of keeping sheep is fairly estimated, it will be seen that, with prime animals, no other branch of agriculture has yielded better or more uniform returns on the capital invested.

The following have been the average annual prices of New York State fleece wools for the past seven years, per pound, in cents.

Years.	Saxony.	Full blood.
1855-6	46 to 50	39 to 41
1856-7	53 to 56	46 to 49
1857-8	38 to 41	33 to 35
1858-9	45 to 50	40 to 42
1859-60	50 to 54	45 to 47
1860-1	48 to 51	43 to 45
1861-2	42 to 46	40 to 44

The examples of France, Germany, and England all show that vastly higher priced lands than any in New York carry sheep at a profit, and in the two first named countries the wool-producing sheep are preferred to the mutton sheep, though the growers are exposed to the competition of the far cheaper wool-producing lands of Southern Russia and Hungary near by, and of the Cape Colony, South America, and Australia further off.

The production of mutton has been too much disregarded in America as a concomitant of the production of wool. Near large meat markets mutton is the prime consideration, and wool but the accessory; remote from such markets the converse of the proposition is true. But it does not follow in either case that the secondary object is to be unnecessarily neglected. The great body of Americans are neither accustomed to, nor do they choose, excessively fat fresh meats of any kind, particularly mutton. A portion of the population cook and eat mutton as soon as it is killed. Every experienced meat producer knows that a pound of well-fatted mutton can be raised more cheaply than a pound of any other well-fatted meat. The American consumers are discovering that it is as palatable and nutritious as any other kind of animal food, and wastes materially less in cooking than beef. Prime mutton now commands higher prices in the markets of the States than the choicest qualities of beef. Its consumption is rapidly increasing in American cities, and also in small inland local markets, and on farms, because prime lamb and mutton can always be supplied in the latter places, whereas meat from large fat cattle cannot be, unless in cold weather as such animals make more meat than can be disposed of unsalted in such situations.

The increase in the numbers and in the early maturity of sheep enables England to support a vastly larger population than it possibly could have done 100 years ago. It is hardly too much to say that the continued sustenance of its peo-

ple, and the fertility of its soil, depend upon these animals. England proper, with an area of 51,000 square miles, has upwards of thirty millions of sheep. Without these, its soils could not be maintained in their present productiveness, and its population of 17,000,000 supplied with animal and vegetable food. It is now a conceded fact that an equivalent result could not even approximately be obtained by the substitution of any other animals.

The meat of the Merino, when well gathered and properly treated, is juicy, short-grained, high colored, and well flavored. In all these particulars American taste adjudges it superior to the meat of the English long-wooled sheep. Professor Wilson states that the Merinos may be fed up to 110 to 120 pounds at two years old. The full-blood Merino produces as good mutton as the ordinary country and western Merino grades of the States, if killed as young, and in as good condition. It costs no more in proportion to weight of carcass to keep it. Its wool is worth from a third to half more per load. "Wherever, therefore," observes Dr. Randall, "it is profitable to grow the common grade sheep, partly for mutton and partly for wool-producing purposes, it is more profitable to rear full-blooded Merinos. In the State of New York we could, by the substitution of fine, heavy fleeces for those now carried by our grade sheep, profitably grow 200 per cent. more of mutton in the wool-growing districts than we now do." He also adds, that during the thirty years he has kept Merino sheep the fleeces of his flock have averaged more than 2 dollars a-head per annum; and wethers produced fleeces worth about 3 dollars. As on the best lands of the State it now costs about 2 dollars a-head annually to keep Merino sheep, the lambs and manure may be looked to as the gain.

The only change which he considers necessary or desirable to make in the form of the Merino, to improve it as a mutton sheep, is the same which it requires to improve it as a wool-bearing sheep, viz., to convert the flocks which now deviate from that standard into low, round, hardy, easily kept sheep. The wethers may at some future day be turned off at two years old, under a system of feeding analogous to that pursued in England, but it is doubtful whether this will be found most profitable. Prime full-blood ewes will probably in New York never be slaughtered before they are six or seven; indeed, until their number is enormously increased they never will be turned off at any age to the butcher. They have twice or thrice the longevity of the improved English breeds, in which early maturity is indeed the precursor, if not the cause, of an equally early decline. Merino ewes not unfrequently raise good lambs at fourteen or fifteen years old, and Dr. Randall was informed that the dam of the once famous "Robinson ram" had a lamb in her twenty-second year.—*Mark-lane Express.*

APPLICATION OF CHEMISTRY TO AGRICULTURE.

LECTURE BY BARON JUSTUS VON LIEBIG.

(Concluded from Page 63.)

In this manner science showed what was the real productive force of the soil, and fixed its laws of culture; it showed that the system of culture proposed by Thäer, would have had very different results if that eminent man had known the true productive force of the soil, and had been able to base upon it his doctrine of agricultural equilibrium, or if, whilst his doctrines developed themselves, agricultural instructions had fallen into the hands of men of science, instead of tradesmen.

It is true that in the schools of agriculture they had taken care to teach natural philosophy, chemistry, and other branches of natural history; but the knowledge that the pupils acquired in these sciences was not applied by the professor, completely ignorant of the sciences of practical culture, and skilful only in taking the land. Young men thought then that natural sciences only served as ornaments to trade, and that they were introduced into their studies merely to torment them.

In Germany the directors of these schools had succeeded in keeping them in the country, in some cloistered isolation, far from the scientific movement, which had then penetrated into all classes of the population, for in that way alone it was possible for them to ensure a certain duration to their system of instruction, and to their position.

In countries where, as in England and France, the *élite* of the better portion of the agricultural population were not poisoned by erroneous teaching, the development of the new doctrine followed its natural course. The principles in themselves were recognised as unimpeachable; only upon the manner of applying them, and how far their application might be extended, there were discussions which lasted several years. It was for the cultivators of England and France the time of study, in which they learned to know principles, and apply them judiciously.

On the contrary, in the eyes of teachers and upholders of the general system of culture followed in Germany, the new doctrine seemed to be unjust pretensions. Destitute of all knowledge of the natural sciences, they could not comprehend the connexion which existed between the innumerable analyses of soils, plants, and manure, and the sciences themselves; they could not see that the new theory was only the expression of the facts themselves. They had been accustomed to designate by the word *theory* what they had by chance observed, and what had been explained to them of the phenomena of culture, and they knew that the theory one man formed was of no use to another; it was further admitted in principle,

that the practitioner ought not to be guided by these theories, but should conform himself to the circumstances in which he is placed, and to the evidences by which he is surrounded. They were not aware that these circumstances and evidences are natural laws, for they could not comprehend what science had to do with practice, and that its object was to throw light upon the facts and evidence which served for its rules.

Not only did the new doctrines appear to the school of agriculture in Germany as without foundation, but they considered it as a personal attack and an offence, because if the new doctrines were true, the old ones must be contrary to all reason, and those who taught them, far from promoting progress, prepared the future ruin of agriculture.

If, in fact, all operations of the cultivators are subject to imperious new laws, it was absurd of him to think that he possessed the least power over his land, or that his labor, experience, and ability had the power of obtaining a good crop from a plant that did not suit the composition of the soil which ought to produce it. It was not he, but the land that should choose the plant suited to it. He only put the plants into the ground, and his penetration consisted in interpreting what it told him. What depended upon will, and what constituted his art, reduced itself to finding out what was wanting in the land, in supplying it, and in removing the obstacles which hindered his fields from paying for the care that he bestowed on them.

All that certainly was in the new doctrines, and more than that; for in the transition to scientific practice, agriculture lost its ancient character. It could no longer be the innocent pastime of the country gentleman. The German cultivator had long misunderstood the source of the strength, well-being, and riches that flowed from it.

The idea of making artificially in all its constituent parts stable dung, for which a living organisation was necessary, appeared at first to cultivators an idea quite impossible to realize, and the first artificial manure caused a laughter amongst the farmers; and when the first trial of it failed, there was quite a jubilee amongst the learned agriculturists; the farmers rejoiced to see that the means destined to diminish their labors, and aid them in future, were not successful.

It would be unjust to suppose that the false and erroneous opinions of cultivators, now and formerly, are peculiar to their profession; or that men of any other profession whatever had come into the world, abler or wiser. The history of natural sciences shows how little this is the case. At the time of Thäer, analytical chemistry was little known: the constituent parts of the ashes of plants, the alkalies, phosphoric acid, &c., had not been discovered in land, so that naturalists then believed them to

be the produce of animal life, analagous to iron in blood, or lime in the bones of animals.

A hundred years before, practical metallurgists thought that the extraction of metal from a mineral was the result of chemical operation; that the metal was not a distinct body, but the result of a chemical experiment. Then, again, they believed that everything depended upon the mode of procedure, or even the form of the furnace. Ability, or as they said again experience, determined the extraction of much or little of the metal. One obtained 30 per cent. of lead, and 0.2 of silver; another got 40 to 50 of lead, and 0.3 of silver, another, again, 60 per cent. of lead, and still more silver than the preceding ones. Then, as they could not comprehend that the ability of a man or his experience limited him, they went further, and ended by believing that not only all lead ore could be changed into lead itself, but that other substances which contained no lead could be changed into it.

The ideas of the cultivator were, as regarded his fields, precisely those of the metallurgist of the last century. He also thought his labor and ability produced the crops, and that it only depended upon possessing a good method of culture to produce fine crops upon any field whatever.

The metallurgists of our time know, by chemical analysis, what they themselves have learned to practise, that lead ore contains from 80 per cent. of lead, and not more; that the rest is sulphur, and that their ability consists in separating the sulphur from the lead without losing any of the metal.

The object of the metallurgist is still the same—obtaining lead, but in a different manner. That to which he directs his attention is, not the lead, but the sulphur, which retains the lead, and prevents it appearing what it is; and whilst his great care is to separate the sulphur, he obtains more lead at a smaller cost.

In the same manner chemical analysis proved to the cultivator that his soil, down to a certain depth, contains only a limited quantity of the conditions for the growth of plants; it showed him what forms of alimentary substances are necessary to serve for the nutrition of plants. It thus made him see that stable dung, though excellent in itself, is not sufficient to keep the land from diminishing in fertility; that the use of dung alone, produced upon a farm, will not increase the quantity of alimentary substances contained in the earth; that it only puts them in movement, and displaces them; that with dung they could only give to the surface of an exhausted wheat field what had been taken from it under the form of fodder plants; that it can give no more to a field than what was taken from it, to the impoverishing of another; that the revenue of one who uses nothing but stable dung is like a life interest, with which he exhausts his capital.

The term artificial manure is not altogether

exact, for art cannot produce that manure: it only reunites the constituent parts of dung, and mixes them in a manner suitable to the wants of each plant.

The state of agriculture now can be described in a few words. What cultivators thirty years ago thought impossible is now not only possible but has come into general use; they thought it was impossible to manufacture anything that would take the place of stable-dung. It will suffice, with reference to this, just to glance at what the Duke of Argyll said in his lecture at the opening of the Society of Naturalists in Glasgow; that in 1854 already 60,000 tons of artificial manure had been made in England, and that in the preceeding year the farmers of England, France, and Germany had used in their fields more than ten million metrical quintals of this manure. As one quintal of that manure increases upon an average the produce of a field three quintals of rye or its equivalent, so a field gives that quantity more than it would have yielded with stable-dung; it is easy to calculate what a mass of alimentary substances we have enriched ourselves with by the use of the manure.

A single chemical preparation, that of superphosphate of lime, has been known in England as of so much importance in the cultivation of turnips and fodder, that it is calculated the produce in meat and grain has increased since the introduction of this manure in the same proportion as if the extent of cultivable land had been increased one-fifth. We can form an idea of the consumption of this article if we consider that it is prepared with sulphuric acid, and that the preparation of sulphuric acid in England, has been nearly doubled since the use of superphosphate of lime.

Still, the production of alimentary substances, and the wants of the populations in Europe, are far from being in a state to inspire confidence. The equilibrium between production and consumption resembles a balance, where a slight increase of weight occasions not oscillation, but a complete fall of the scale. Thus the failure of one crop, that of potatoes in 1847, has made, in spite of a good grain harvest, enormous prices in bread, and caused a famine in Ireland, Silesia, and Spessart. The importations of corn and flour from countries out of Europe have, until now, sufficed to maintain a sort of equilibrium; but it is certain that a maritime war which would not be of very long duration, but which would hinder the arrival of corn and flour, guano, and other manures, would extend over all England a famine in its most horrible form.

This rapid glance at modern agriculture serves to show how and in what manner science has made itself generally useful. Recently the proposition was made and adopted by the Chamber of Deputies, Bavaria, of addressing to his majesty the king that he would give to our academy a direction more useful to the kingdom of Bavaria. That proposition is remarkable, because it shows how little extended are

right ideas of the mission of a learned corporation. Our academy certainly is not science itself; but each member in his sphere, and according to his strength, takes part in the solution of the scientific problems of the age, and exercises a certain influence over legislation, commerce, trade, and manufactures.

Those who profit by the discovery of science are rarely in a position to know in what manner science has increased their strength or fortune. If chemistry gave to the farmer good receipts for manure for every field, or a remedy for the potato disease, a means of destroying moles and mice, or prevent the laying or rotting of corn, the practical man would no longer be in ignorance of the sources of these ameliorations. But science does not occupy itself with things useful only to individuals; it seeks to discover what will be useful to all, and those ideas that rule and guide the actions of men. It seeks to discover whether these ideas are conformable to the laws of reason and nature; it rectifies false views, and puts the perfect in place of the imperfect.

Science is only useful so far as she rectifies the ideas of men. But all intellectual progress takes a long time to develop itself; and often many generations succeed each other before one old error generally believed gives place to a recently-discovered truth. As the roots of a plant only take just what is necessary for its nourishment from a large sheet of water, and as it is killed by too much nourishment; as it is necessary that the light and heat of the sun should give their aid to the germ before it can develop itself and become a vigorous tree, bearing fruit; so the development of men's ideas is governed by similar natural laws.

The abstract idea, though fruit in itself, is not the tree full of fruits; it is the germ of that tree, which needs heat, care, and nourishment extremely diluted, before it is able to bear fruit. There are some ideas which, for a time, disturb a whole population, and then disappear without leaving traces of their existence; they perish, as the branch of a tree from another climate, put into water, throws out leaves and flowers, but bears no fruit, because it has no roots. The fruits of progress which we of the present time enjoy had their roots in generations which have passed away; and the new discoveries which we make now will only be profitable to our children. Even the smallest improvement in a trade took a long time to work its way into the masses. The idea of using phosphorus in the manufacture of matches originated in the middle of the last century. More than fifteen years were necessary for obtaining useful results from the experiment of igniting powder in a closed space; and now to those very experiments we owe all the improvements in firearms.

A prevailing error—which is much more difficult to destroy than the majority of men believe it—is not the sole cause of the long time which elapses before a scientific truth comes into gen-

eral use; the routine, the want of being able to think deeply, the dislike men have to use their reason, are not the less obstacles. The most ignorant peasant knows that the rain which falls on his dung-heap reduces it in value, and that it would be to his advantage if he could have upon his fields what infests the streets of the village and poisons his wells; but he sees it with an indifferent eye, just as his father did before him, because it has always been thus.

It is the same in large towns: the municipal authorities spend large sums in carrying away and putting out of reach of the cultivators the excrements of men and animals which amass themselves and which would be sufficient to reproduce bread and meat for hundreds of millions of men. This the farmers see with as much indifference as the citizen. They think it is of no importance to the public welfare, when they are obliged to bring from America, a distance of some thousands leagues, the very same matter. The way of seeing more justly and correctly, which raises the intellectual power of a man, requires a long time to develop and extend itself; intelligent application abridges the time, but the mass cannot perceive so readily.

If the populations are not prepared by education to receive the instructions of science, which tells them to try and adopt what will better them, then all efforts to render these instructions generally useful will be fruitless. If in such a country science went from house to house offering its services, those most in want of it would, in their senselessness, shut the door against it. He would say that he did not want its help, it was of no importance to him; that he had enough instruction, and that there were other things which he wanted. We have often seen the farmers refuse to try the experiment of using artificial manures upon their lands that the agricultural societies offered them at half the trade price. They wanted to get them for nothing, and then he thanked for taking it from them; and, in fact, when they got it for nothing, they would not make use of it. All these circumstances are only transient, for no population can for ever shut itself from progress, and renounce the power and riches that science procures. For these populations there is always one source of consolation left—that truth and goodness are indestructible, and that in a suitable time God will cause the seeds to ripen.

But, again, in the countries where scientific results have been favorably received, as a rule, those to whom they are the most useful are the men who know least the reason why they are so useful; for if after some years' struggling they have conquered, in fixing a scientific truth, all the obstacles which oppose themselves to its useful action upon life, the next generation, which has grown up in the new ideas, knows not that they are the fruits of immense intellectual labors. It knows as little as the young telegraphist of to-day knows

that the small apparatus with which he works, and which affords him a useful and comfortable position in society, is the fruit of the most painful labors of certain men during half a century, and that it is the result of a series of facts which had first to be sought and discovered before that apparatus could be invented. The young generation thinks that all these things have always existed; and it never enters into its thoughts that what is now recognised as reasonable and useful was formerly disputed and regarded as inconsistent, erroneous, and bad.

The greater proportion of men have no idea of the difficulties that attended the labors by which the domain of science has been enriched. It may even be said that that innate disposition in a man to search out truth would not be sufficient in itself to cause him to surmount the obstacles which oppose themselves to the obtaining of every great result, if that disposition did not become in a few a powerful passion, which expands and increases their powers. All these labors are entered into without regard to profit in the individuals, and without a claim to gratitude. Those who accomplish them seldom live long enough to see their discoveries usefully applied. What they have labored for they cannot convert into money in the great market of life: it is merchandise that fetches no price—that can neither be ordered nor bought.

The most powerful action of science upon the lives and minds of men is so slow, so void of all noise, and so little apparent to the eye, that it is altogether impossible for a superficial observer to see how it works, or even that it works at all; but those who see the groundwork of things know that in our time progress in the world without science is impossible, and that the reproach of their not being generally useful ought to be addressed to the populations, and not to scientific men, who each in his way follows his aim, suffering nothing to lead him astray from it, and without thinking of the future utility of his labor either to himself or to one country only, but to the whole human species.

CROSSING SHORT-HORNS.

The power of a cross in a pedigree is determined by its position. Numerically, it can never, of course, be more or less than one; but relatively to its circumstances it may denote a half (which amount it cannot possibly exceed), or signify a fourth, or dwindle to an eighth, or shrink to the proportion of a sixteenth, a thirty-second, or a sixty-fourth, and so on; until though as palpably present and as large as ever to the sense of sight, it has become, as regards potentiality, a fraction too minute to be noticed in a calculation. There was a time when each cross constituted the entire half of the pedigree, and was precisely equal to all the rest. But

each cross has to give up a portion of its authority as another comes before it. It represents the half of a pedigree only so long as it is the nearest in order; and as it recedes by the superaddition of new crosses, the degree of its power diminishes according to a necessary arithmetical ratio. This is very important to bear in mind; for if it be true, as it unquestionably is—either a cross which was once objectionable may really be so no longer; or a cross which once possessed a commanding importance may have little individual value left (its situation being changed) beyond the association of a consecrated name. A pedigree cannot be too exactly investigated and decomposed; but the whole of the pedigree depends not upon the particular worth of each party, abstracted from the rest, but upon the character of the whole as concrete. This character is ascertained by a computation of quantities, of every one of which a separate and competent knowledge is supposed. In pursuance of a subject which has been frequently discussed, and in a variety of ways, in the columns of the *Messenger* during the last fifteen months, and which, we venture to conclude, is somewhat better understood by the majority of readers than it was fifteen months ago, we copy out a bull's pedigree, to a consideration of which, and directly in reference to the foregoing remarks, we invite attention. The bull is nephew and half-brother to Mr. Langston's prize-winning bull Lord of the Harem (16,430), and is the property of a gentleman in the county of Westmoreland. The sires in the pedigree stand in the following order:

Duke of Buckingham (14,428);
Duke of Buckingham (14,428);
Grand Turk (12,969);
Fitz-Adolphus Fairfax (9124);
Sir Thomas Fairfax (5196);
Ambo (1636);
Memnon (2285);
Pilot (496);
Agamemnon (9);
Burrell's Bull of Burdon.

An eminent authority in short-horn matters, alternately viewing this bull and his pedigree, at length delivered himself of the following oracular observation—"Those Fairfax crosses spoil him." "Why?" was the reply. "Because there's a *prejudice* against them." Waiving any remarks upon the absurdly inconsequential answer to that most searching and often pugnacious adverb, "Why," and admitting, for the occasion (which we do not admit with the concurrence of our judgment) that the prejudice has a reasonable foundation, let us inquire into the actual proportion borne by the two repudiated crosses in the pedigree of the animal alluded to. The pedigree consists of ten crosses; seven of these crosses being Booth (for the earliest five crosses are now universally and not improperly accepted as such); one, half Booth and half Bates; the other two, Fairfax blood. The Fairfax crosses stand as prominent as ever, and count two as plainly as ever they did; but they don't stand for what they once represented; they are no longer the signs they were

when the pedigree began with them; their altered situation is accompanied by an altered influence. To the eye they are as two to ten, or, in other words, seem to constitute one-fifth. But tested in another way—the whole pedigree being subjected to a careful dissection, and each component part, at least, of what composes the visible formula thoroughly analysed and examined the result is very different indeed. This result shows that the proportion of Fairfax blood is in reality only as 3 to 32; the other 29 parts consisting of Booth blood, with so much of Bates (in the Grand Turk crosses) as 2 is to 32. In fact, out of 32 parts 27 are pure Booth. So that, in this case, the eye is a deceiver to the extent of the difference between one-fifth and three thirty-seconds. And yet people go on, idly not thinking, and satisfied with conclusions that owe their existence to impressions, as we said a little time ago, projected from the surface. But, in point of fact the preponderance for Booth blood is even greater than has been expressed, and the Fairfax blood somewhat less; inasmuch as in the blood of Fitz-Adolphus Fairfax that of Warlabby is present, to the extent of one-sixteenth more than a quarter. So that, directly, Booth blood has 27 parts out of 32; and (obliquely, and in addition to the 27 parts) a proportion of the quantity just specified as present in the pedigree of Fitz-Adolphus Fairfax. Fitz-Adolphus Fairfax was, in truth, one of the most magnificently bred bulls in the Herd Book; and it has often been a matter of surprise to us that persons who form their judgments altogether by pedigrees should seem to overlook this circumstance. If our observations were designed to extend beyond pedigree on the present occasion, we might speak in very high terms of commendation respecting the personal character of the two cows whose sires were Sir Thomas and Fitz-Adolphus Fairfax. The former a noble short-horn, was bred by Mr. Fawkes, of Farnley, and passed into the hands of Mr. Cruickshank, of Sittytton; the latter, and equally admirable animal, was owned successively by Mr. Douglas, of Athelstaneford, and Mr. Ambler, and became, in the possession of Mr. Housman, the dam of the mother of Lord of the Harem and of several females not inferior to him. This, however, is not our purpose. We designed to treat of pedigree, and pedigree alone; and if in doing so, we have seemed to some of the readers of the *Messenger* to utter commonplace, we console ourselves by remembering the words of a master logician, who says, that when much ignorance prevails on a subject, to utter a commonplace may be equivalent to the announcement of a new truth. It is at any rate, even to the initiated, good exercise to investigate a pedigree with reference to its real contents, and to ascertain with precision the quantities or proportions of its constituent parts. We saw a catalogue the other day (it shall be nameless) in which, by the use of addition, instead of division and subtraction, the most ridiculous mistakes are perpetrated—to say nothing of the grammar.—*Bell's Messenger*.

ANNUAL PRODUCTION OF AMMONIA IN LAND.

That air and moisture undergo decomposition in the soil, and that nitrogen and hydrogen are liberated in the process, will really be granted; but the union of these latter two elements, so as to form ammonia, does not accord with our present state of science, no process having yet been discovered by which free nitrogen and hydrogen unite. In a large class of soils, however, when properly cultivated, the nitrogen and hydrogen may be in combination with other substances in such a way, as to obviate the objection thus raised against this highly interesting proposition. In point of fact, such compounds are liberated, and hence are present in the soil. This must be admitted by all who have practically examined the matter, for the smell of them is sometimes as strong as to be felt by the ploughman when ploughing land between the wet and the dry. Such, then, being the facts of the case, the natural production of ammonia in land, when properly cultivated, becomes one of those propositions that require practical investigation.

The production of ammonia in this manner has long been advocated by some agriculturists, in order to account for the great fertilization of land when properly cultivated, as compared with opposite results under bad tillage; and those who do so, are attributing no small part of the heavier crops produced under steam-culture to this fertilizing source. The more common region to which chemists flee for nitric acid and ammonia, is that of the clouds and electricity; but when brought to the test at the bar of experience, we must confess that this looks more "like building castles in the air" than solving the problem of how one field is enriched by showers, while another is the reverse—results which would be otherwise were nitric acid and ammonia directly applied by artificial means. And, besides this, land has been, and being, fertilized through the instrumentality of air and water artificially applied, apart altogether from the clouds of electricity (we mean the electricity of the atmosphere). Those farmers, for example, who are now enriching their lands by means of the steam-plough at this season, do not leave *terra firma* for the upper world, there to catch the lightning and the clouds, or yet stretch wires across their fields and fly kites to bring down the igneous fluid to perform its wonder-working miracles in the soil. On the contrary, they simply smash up their tenacious clays between the wet and the dry, let in the atmosphere, and thus leave them, in nature's laboratory subject to chemical laws with which we are not as yet sufficiently acquainted practically to trace the effects produced to their respective causes, although the extra bushels of corn and tons of mangolds evidently speak for themselves.

Should the proposition which we have thus chosen to notice be eventually established, and adopted into applied science as a realized matter of daily experience, at the will of the far-

mer, it cannot fail to become the grand desideratum of the day.

The Society of Arts offers a premium "for the production of ammonia or nitric acid from their elements, by methods which would admit of practical application;" and some time ago a paper on "A new Method of Manufacturing Ammonia" was read by Alexander Williams Neath, before a weekly meeting of the society, bearing closely upon the practical illustration of the subject before us; so that the progress of things is, at least, advancing in the direction of its ultimate solution.

In this work of scientific and practical inquiry, one of the chief difficulties experienced is the examination of those processes that take place below the surface of the soil. The facts of the case being imperceptible to the naked eye, the agriculturist and chemist are left to grope their way, as it were, in the dark, and to draw conclusions from scientific data, rather than practical. Thus when either breaks a clod, his olfactory organs unmistakably inform him of the escape of the sulphurous gases; and when he farther proceeds to examine from whence they are liberated, the question is all-but self-evident, that they must have been confined in the pores of the soil, along with air, while undergoing decomposition, and that in the process of cultivation fresh air is admitted and confined, along with the moisture, &c., the whole being subject to chemical laws not yet understood, as already stated. But inquiry cannot stop here; for the cracking clods, through the instrumentality of moisture absorbed and their own gravity, are seen bursting asunder into fragments, so that another question naturally arises, *How is the equilibrium of things affected by such means?* Are caloric, light, and electricity in any way distributed, so as to produce nascent nitrogen, and then ammonia, or sulphate of ammonia, or any ammoniacal compound, in the decomposition of the animal, vegetable, mineral, and gaseous matters thus pent up in the pores of the soil, or present in it, under the special circumstances of the case? The question here, it must be borne in mind, is not as to whether ammoniacal fertilizers are generated during the composition of animal and vegetable substances? that being a realized fact; but whether the presence of the other substances under consideration produces an increased supply, so as to account for the increased fertility of the soil experienced? an increased fertility which is proved by the heavier crops harvested. It is now an established fact that, under steam-culture, heavier crops are being produced, with less manure applied to the land than formerly; while the land itself continues to increase in fertility. Had the heavier crops been raised by exhaustion of manurial elements in the soil, the two sides of the balance-sheet would have tallied; but in practice it is otherwise. Hence the practical question that demands solution.

There is, however, another way by which an exact balance may be effected, without the natural production of ammoniacal fertilizers, in accordance with the above proposition. Thus

if, under horse culture, a waste of manurial elements takes place, then all that is necessary to render a perfect balance with the heavier crops now growing under steam culture, is a great economy of manurial elements in the natural laboratory of the soil at this season and during winter, as well as during spring and summer, when crops are growing. A greater amount of water is consumed in the growth of heavier crops, and a larger quantity of oxygen abstracted from the atmosphere or air in the soil, while the decomposition of water is less. Consequently, under steam culture, less hydrogen is liberated in the soil than under horse culture; but the amount of nitrogen disengaged from the pent-up air is much larger.

That this latter solution of the question is true to a very large extent, is amply borne out by fact, the greater waste of manurial substances under horse culture being so self-evident as hardly to require proof. At the same time, there are innumerable cases of summer fallows and poor clay soils to which the solution is not applicable, so that farmers have no alternative left but too fall back either upon the old favourite theory of the clouds and electricity, or else have recourse to the more modern one under notice,¹ of ammoniacal fertilizers being generated, by some unknown process, in the soil. Now, the reader will readily perceive that when an exception of this kind is once admitted, it must of necessity become the general rule; for, if ammoniacal fertilizers are generated in the exceptionary soils referred to, they will be much more readily produced in the other cases where the process of formation is already in operation. Hence, the argument turns in favour of the proposition instead of against it.

Before discoveries in physical science are made, all inquiry in search of them must as a matter of course partake more or less of a speculative character; and in this light the few desultory observations just made on the natural production of ammoniacal fertilizers in land will it is hoped, be received. Whether such takes place in the soil in the manner stated or not, a clear case, besides, relative to the greater economy of manurial element, has been made out in favour of the steam plough, more especially in early autumn tillage. And, if to this greater economy the progress of discovery shall eventually add that of the natural production of one of the most valuable fertilizers now in use, the total advantage gained will be inestimable. We have purposely avoided detailed calculations as to the amount of nitrogenous element on either side of the balance-sheet, as all such generally exemplify a great tendency to dogmatical empiricism than to practical usefulness. Some plants, it is said, exhale ammonia; and hence in all probability, have the function of generating it within their organism; and why should not the soil possess a similar function, either before the seed is sown, or else during the growth of plants—two distinct views of the question which ought not to be lost sight of in its investigation. When the steam plough enters the field, at this season,

the farmer commences a work that is only concluded when he harvests the crop of the ensuing year, so that one subdivision of it cannot be examined apart from the rest, as regards the excretory products of plants, and the specific function of the soil under all the circumstances of the case. The success of "Tull's horse-hoe husbandry," of the modern systems of draining, subsoiling, scarifying, and of spade-husbandry, as also of the rotation of crops; have all been pointing in the direction of an affirmative answer being one day given to the question under consideration. A common doctrine has thus been practically taught, that a chemical relation exists between earth, air, and water of a utilitarian character, like all Nature's works, that is not yet practically understood in all its details. With the extra produce grown, the agriculturist has long been familiar, and also with the general mechanical means by which such results are obtained; but when we come to the chemical data in the laboratory of the soil, the further prosecution of the subject must be left for discovery to pursue. All manual topics are highly interesting, and the one to which we have drawn attention is doubly so, inasmuch as the supply is unlimited, and the gratuitous gift of Nature.

Since the above was written, a notice has appeared in the leading columns of the *Gardener's Chronicle*, stating that Schonbein has discovered a natural process whereby nitrate of ammonia is formed during the evaporation of water, thus experimentally solving our problem—a process which cannot fail to lead to farther discoveries in the same direction.—*Farmers' Magazine*.

AGRICULTURAL IMPORTANCE OF DEW.

Whilst the rain-cloud supplies the earth with its greatest amount of moisture, there are other means that Nature possesses for feeding vegetation with this necessary element. There are parts of the earth where rain never falls, and where a cloud is hardly ever seen; yet in such regions Nature displays in some instances all the luxuriance of more favoured localities. Moreover, during some portion of the year, in our own country, no raindrops fall; yet Nature does not fail, nor vegetation cease to thrive. The other source lies in the dews and fogs that rise into the atmosphere during the heat of the day, and at night get deposited on the leaves of plants and on the ground.

Let us for a moment look into the philosophy of the thing, and see how the beneficial results are brought about. The principles on which the formation of dew depends are, the radiation of heat and the condensation of the invisible vapour contained in the atmosphere by cold. Formerly it was thought that the cold observed on the formation of dew was effected by the dew, and not, as is really the case, the cause of the deposition itself; before dew can be formed, the body on which it becomes apparent must be colder than the surrounding air.

In considering, therefore, the beautiful phe-

nomena of dew, we shall find that the laws of heat are intimately connected with it.

All bodies, whether existing in the form of primitive rocks and earths of creation, or of the green dress that a later age has thrown around the globe, or the compound materials that the industry of man has made for his comfort and use, has the property of radiating, or giving off into space, its heat; but all bodies do not possess this faculty in the same degree: hence the variety of the phenomena which the subject of dew presents for our consideration.

Let us observe how these effects are produced in nature. On clear nights the ground—let us suppose it to be covered with herbage—becomes colder than the atmosphere; every blade of grass is continually giving off its heat into space, and receiving none in return from the sun, as is the case during the day. That this is the fact may be observed by placing a thermometer with its bulb on the grass, and another raised a moderate distance from it; the former will be found to indicate a lower temperature by several degrees than the latter.

When radiation has proceeded to such an extent as to produce the required degree of cold to precipitate the vapour existing in the air at the time, dew is the result: giving that beautiful appearance that we see in the early autumn mornings, when each blade of grass seems edged with shining diamonds, that reflect the rays of the morning sun in all directions. But its value does not consist merely of the pleasing effect on the eye: during many days in the summer and autumn, drops of vapour so supplied are the only ones that vegetation receives.

As we have said, different substances have different radiating powers, and consequently different aptitudes for exhibition of dew; even on some leaves more dew will be found than on others of another kind which radiate heat less readily. A sheet of polished metal and one of glass, if exposed to the sky during the night, will exhibit the phenomena in different degrees. The texture of substances also determines their capacity for radiation. Those that are loose, such as fine raw-silk, masses of unwrought cotton, wool, hair, and other similar materials, possess the power of radiating heat in a very eminent degree; whilst closer and more compact bodies do not show the same readiness in parting with their heat. This is why we often see the delicate fibres of the gossamer, which covers our hedges at some periods, covered with dew, when but little or none is observed on the surrounding foliage. Substances of the kind above enumerated are sometimes as much as from 5 to 15 degrees colder than the air, as is shown by the difference between a thermometer whose bulb is placed on such substances and one whose bulb is freely suspended in the atmosphere. In cold climates the difference is still more marked.

There is another circumstance that modifies the extent of radiation at different times, and that is the state of the sky with regard to the amount of cloud. When the sky is perfectly cloudless, radiation goes on with great rapidity, but is checked by the slightest covering even

of the slightest description. When the heavens are totally obscured, radiation is stopped all together, and consequently no dew is deposited; also if wind prevails no dew is found. The reason of this is, that the cold stratum in contact with the ground is constantly being replaced and driven away by others of a higher temperature.

As may be imagined, the moister the air is, the more abundant will be the dews; thus in arid deserts, notwithstanding the intensity of nocturnal radiation, there is no precipitation of moisture. Therefore, nights that give a large amount of dew in our climate may be taken as an indication of approaching wet, since they show that the atmosphere is abundantly supplied with aqueous vapour. In frosty weather the dew becomes frozen, and the name white frost is applied to such an appearance. The products of the kitchen are frequently killed when this takes place, and it becomes advisable to protect plants as much as possible against such a calamity, by covering them with straw or other light material, so as to oppose the process of radiation, and prevent excessive cooling. Trees offer a very good protection to vegetables in this manner. The ancient alchemists ascribed very peculiar properties to dew, and used to collect it carefully, believing that it came direct from the stars, and contained gold! Gold it does *indirectly* give, by the benefit that is conferred by it upon vegetation. On analyzing the water so obtained, it is found to be of great purity, but containing a little more carbonic acid than ordinary rain-water.

Honey-white or *miller* are terms sometimes applied to certain cases in which sugary secretions are found with the dew upon the leaves of plants; but these foreign substances have been shown to be due to certain insects which, at times, are found with it, and not, as was for a long time believed, to any property which descended with the dew. After dew has rested on the plant, it becomes charged with organic juices, and decomposition taking place produces a kind of sugary substance. This, and the foregoing remark, explains the cause of the occasional peculiarities that we have mentioned.

Dews are much more abundant in the open country than they are in cities. The reason of this is, that in the latter situation the houses conceal a portion of the sky, and, consequently, objects do not present so much radiating surface to the heavens. Dr. Wells demonstrated this by experiment on a piece of wool. He took two pieces, of the same size and quantity, and exposed them in the open air all night; but the one he enclosed in a cylinder, open at the top. On examining these locks of wool, the next morning, the one that had the cylinder round it was found to have much less dew deposited upon it than that which was quite free. The reason of this was that the cylinder prevented the wool placed in it from subtending an equally large portion of the sky.

The quantity of dew deposited each night is sometimes measured. The most simple and

accurate way to do this is to adopt the plan pursued by Dr. Wells, viz., to expose to the open air spherical masses of wool, of similar dimensions, whose weights are accurately known, and then to weigh them again when covered with dew. The difference in the weight before and after exposure will then be the weight of the water that the wool has acquired during the night, in the shape of dew.

It was believed by the ancient philosophers that dew was only deposited in the evening and in the morning; but modern investigation has proved this to be a fallacy, and has shown that it is deposited equally throughout the entire night.

Agricultural Intelligence.

MEETING OF THE BOARD OF AGRICULTURE.

The Board met at the Agricultural Hall, Toronto, on Wednesday, Feb. 4th, 1863, at 2 p.m.

Present:—Messrs. E. W. Thomson, D. Christie, R. L. Denison, G. Alexander, Wm. Ferguson, Asa A. Burnham, Professor Buckland, Dr. Beatty, President of the Board of Arts.

It was moved by Hon. Mr. Christie, seconded by Hon. Mr. Alexander, That E. W. Thomson, Esq., be President of the Board for the ensuing year,—Carried.

Moved by Mr. Burnham, seconded by Mr. Denison, That Hon. Mr. Christie be Vice-President for the ensuing year,—Carried.

The following communications were then submitted by the Secretary:—

From Mr. Prince, Chief of Police, Toronto, presenting a bill for the payment of \$20 for the services of Constables in keeping the peace on the grounds during the exhibition of last autumn, and also for the payment of \$60 for meals furnished to such men on the grounds.

From the office of the Canada Company, acknowledging the receipt of samples of different kinds of prize grain from the late exhibition for the purpose of sending to their offices in England.

From the South Grenville, Enst Brant County, and Onondaga Township Agricultural Societies, all in reference to the proportions in which the Government Grant should be divided between County and Township Societies, a misunderstanding having arisen on this subject in the above two Counties, in each of which there is only one Township Society. The Secretary stated that he had replied non-officially to each of these societies, pointing out the provision of the statute that three-fifths of the public grant is subject to division among the Township Societies in each County, in proportion to the amount of their subscriptions deposited with the County Society, provided that no township society should be entitled to receive out of the Government grant more than three times the

amount of its deposit, and that the amount deposited should also be paid back to the Township Society.

From Evelyn Campbell, Esq., acting Secretary of the Bureau of Agriculture, dated Nov. 7th, in explanation of the deduction of $2\frac{1}{2}$ per cent. from the grants to County Societies in 1862.

From C. Beadle, Esq., of St. Catharines, offering to give certain prizes in fruit trees for the best collections of Pears from the Counties east of the County of York, Upper Canada, at the next Provincial Exhibition at Kingston, with the view of developing the fruit-producing capabilities of that part of the country.

Copy of letter from the Secretary to the Hon. Jas. Patton, Vice-Chancellor of the Toronto University, requesting the Senate to make an arrangement for taking possession of the grounds and buildings occupied by the Board for agricultural purposes, in accordance with the terms of the original lease.

From Mr. Campbell, Bureau of Agriculture, with an extract from a letter from Mr. Wagner, late Canada Emigrant Agent to Germany, accompanying a sample of Bokhara Clover Seed, for trial in Canada.

From Wm. Ferguson, Esq., Kingston, stating that the Corporations of the City of Kingston, and of the united Counties of Frontenac, Lennox and Addington, had each voted \$2000 in aid of the next exhibition, and submitting the names of certain gentlemen chosen at Kingston to form the Local Committee for making preparations for the Exhibition.

A statement of receipts and expenditure from the Local Committee of the Exhibition of 1862, showing that the expenditure had exceeded the receipts by the sum of \$166 83, and requesting that that sum should be placed at the disposal of the Committee for the purpose of meeting their indebtedness.

From Messrs. Austin, Baldwin & Co., New York, Agents for an International Agricultural Exhibition, proposed to be held at Hamburg, Germany, in July next, soliciting the co-operation of Agricultural Societies in Canada towards that enterprise as far as practicable.

It was then ordered—That the claim of Mr. Prince for \$20 for the services of the Police at the late Exhibition be paid.

Resolved.—That in the event of a Bill coming before Parliament for the amendment of the Agricultural Statute, it be a recommendation that in case of there being only one Township or Branch Society in a County or Electoral Division, the Government grant be divided between the County and the Township Societies in proportion to their respective subscriptions, but that the Township Society in any such case shall not be entitled to receive more than one-half of the public grant.

Ordered,—That the Secretary be instructed to apply to the Minister of Agriculture for the

amount of the $2\frac{1}{2}$ per cent. deducted by the Government from the grants to Agricultural Societies in Upper Canada for the past year, and that the said amount be applied towards the liquidation of the expenditure incurred in giving Agricultural instruction and information, by means of the Agricultural and Veterinary lectures delivered in connection with the Board, and through publication of the Journal.

Ordered,—That the resident executive committee be instructed to effect an arrangement with the Senate of the University in reference to the Experimental Farm Grounds and buildings as soon as possible.

Moved by Dr. Beatty, seconded by Hon. Mr. Alexander, and *Resolved*—That the balance presented as per account of the Local Committee of the Exhibition of 1862 be paid.

Resolved.—That the proposition of Mr. Beadle to offer a selection of fruit trees for competition at the next exhibition be assented to.

On motion the list of names received from Kingston to compose the Local Committee was agreed to.

Resolved.—That the days for holding the Provincial Exhibition at Kingston this year shall be the 22nd, 23rd, 24th, and 25th September next.

Ordered,—That a Committee be appointed to revise the Prize List for the current year, consisting of the President of the Board of Agriculture, the President of the Association, Professor Buckland, and Mr. Denison, for the Agricultural Department; and the President, Vice-President and Secretary of the Board of Arts for the Arts Department.

Moved by Mr. Ferguson, seconded by Dr. Beatty, that Mr. J. E. Pell be appointed Superintendent of the Arts Department this year,—Carried.

Ordered,—That the names of the Superintendents of Departments be published with the Prize List.

Ordered,—That the Secretary be instructed to procure estimates of the cost of printing a Herd Book, containing the Pedigrees of Canadian Short-Horned or Durham Cattle, and submit the same at next meeting of the Board.

The Board then adjourned.

INTERNATIONAL AGRICULTURAL EXHIBITION AT HAMBURG.

The signs of the times tell plainly enough of an indication to grow more mutton and beef in Great Britain. The Central Farmers' Club, not content with arguing on the merits of stock as opposed to corn, have just given a broader reading to the question, and now we are to have the breeding and fattening of stock upon arable farms, as capable, no doubt, of much further development. It is, in fact, for horses, cattle, and sheep that we may still be world-famous, if we only take due care, that is, to preserve our

pre-eminence. The experience of Battersea-fields was alone sufficient to show how far we are before the Continent; while, should internal differences stay our trade with America, there is still the same steady demand from our own colonies and other distant climes. In a word, there is no more pushing business, if we but cultivate with proper attention; and Jonas Webb's career might be almost summed up in his commerce with other countries.

There was no other branch of his profession that from the very first he cherished more sedulously: with counts and barons as his best bidders at Babraham, and gold medals and royal bespeaks as the result of his increasing connection abroad. It certainly sounds somewhat strange that we have not more of his fellows ready to follow in his footsteps. The sale, to be sure, of a fat beast at Poissy might not, perhaps, warrant the trip, despite the honours pretty certain to be associated with the exhibition of any animal of excellence. The opportunity, however, to advertise in a new quarter a good breeding herd, a stud, or a flock should not be so easily passed over. It is not every foreign agriculturist that will come to England, just as every British yeoman cannot be induced to go abroad. But such as do manage to meet should do so with mutual advantage; the more especially if the one be in a position to supply that commodity which the other requires.

A more than usually excellent opportunity of this nature will occur during the ensuing summer, when an International Agricultural Exhibition will be held at Hamburg. As the first meeting of the kind ever held in Germany, the committee are making every effort to render it "memorable for its importance:" encouraged, as the direction already announce they are, by the warm interest evinced for the undertaking, "especially by the Royal Agricultural Society of Great Britain." The council, indeed, have thus early been applied to for the names of gentlemen duly qualified to act as judges in the several sections of stock and machinery; while the prize sheet would seem to have been carefully adapted to our different breeds of animals. Hamburg, as we are assured, is a very important market for horses and cattle, a matter of itself by no means to be overlooked, and English horses and English cattle may, if their owners so choose, occupy the post of honour at the Hamburg show. For horses the programme is peculiarly attractive. There is, to begin with, an offer of £60 for the thorough-bred horse best calculated to improve and perpetuate the breed of the sound and the stout, and bred in any country, with £15 for the second to him. Then follow three classes of half-bred stallions and horses for riding and hunting, to be bred in Great Britain and Ireland; with three more divisions for carriage horses, also to be bred in Great Britain; and two classes for ponies over and under fourteen hands, either open, as it would seem, to all the world. Amongst the heavy

draught horses there are prizes of £15 each for Suffolk Stallions and Suffolk mares, with similar encouragement to stallions and mares of any other English or Scotch breed, and equal amounts devoted to dray horses. Amongst the cattle are separate classes for short horns calved in Great Britain and Ireland, and distinguished as for bulls under and over two years old, and as cows in milk or in calf, or as heifers. The Ayrshires of Great Britain or Ireland are as handsomely recognized; but the other English or Scotch breeds—Herefords, Devons, Highlanders, polled, and so on—are all classified together, though with two equal prizes in each division, so that a best Hereford and a best Devon would have no advantage over the other in the judges' return. The sheep will include special places for Southdowns raised in Great Britain or Ireland, and Leicesters raised in Great Britain or Ireland; for other short-wools, such as Shropshires; and for other English varieties, such as Cotswolds and Lincolns. The pig premiums, the entries for which are all open to all comers, are allotted to large breeds, medium breeds, Berkshires, small white breeds, small black breeds, and "peculiar breeds of other kinds." The grand prize, however, will be one of 700 thalers—or, in plain English, just a hundred guineas—for the best steam-plough, with £45 for the second; and medals to be awarded at the direction of the judges for implements and machinery put to work in the show-yard. Premiums for poultry of every description and for agricultural produce of all kinds go to point an invitation that we believe it will be to the benefit to the English exhibitor that he should avail himself. No other man's interest is studied so much; although, of course, in an international meeting there are other classes—for Arabians, riding, carriage, and agricultural horses bred on the Continent; with yet more extended divisions for Moorish, Holland, Jutland, Swiss, Charolaise, Norman, Brittany, and other cattle; as well as for Merino, Moor, and foreign sorts of sheep. The visit, in fact, will be in every way an edifying one; although it will be better to start armed with so good an excuse as having something of your own in the entry.

Hamburg is directly accessible from London in a forty hours' voyage, and is certainly one of the most convenient cities on the Continent for an international meeting of this kind. England, France, Holland, Belgium, Denmark, Sweden, and Russia, are all easily accessible; and further, as we are assured, "the numerous commercial relations with these countries and other parts of the globe, the total exemption from duty, and all and every customs regulation, have especially favoured the merchants of Hamburg in the interchange of agricultural produce and machinery." The conditions appear to be well drawn and the directions for the judges to be as soundly considered. It is, indeed, very clear that our own system has been carefully studied and imitated, so that an Englishman, whether he be

present either as an exhibitor, as judge, or as a spectator, will be sure to find himself pretty much at home. The arrangements, so far as we can see, have in reality but one flaw, although this may be very fatal to the thorough success of the occasion. The time appointed for the meeting is from July the 14th to July 20th; that is, for the week immediately preceding our own Great National Exhibition in England, the last day at Hamburg being, in fact, the first at Worcester. Now, it is very clear that should this fixture be adhered to, many of our best animals will never see Hamburg this summer. They will be nearly all kept back for the royal honours—after all, the first in the world. Whereas, had or should the International Show be put off for two or three weeks longer, there would be every prospect of our stock going on. We have some doubt even whether judges will face the two, and it certainly appears extraordinary that the Hamburg committee has not been better advised by our own council. The two bodies have been in correspondence for some time, so that it is hard to account for such an oversight. Hamburg cannot come as the immediate prologue to Worcester, though it might compete successfully against Scotland or Yorkshire. Even any such collision, however, is by no means a necessity.—*Mark-Lane Express.*

AGRICULTURAL ADDRESS.

[The following address, delivered before the South Grenville Agricultural Society at their Annual Exhibition held at Prescott, by JAMES CROIL, Esq., of Archerfield, will be found to contain much that will be useful and suggestive to our readers.—EDS.]

MR. PRESIDENT AND BROTHER FARMERS:—In attempting to discharge the very important and responsible duty which you have assigned to me on this interesting occasion, I feel that it would be quite out of place for me to present myself as an instructor before this vast assemblage of practical farmers, for, full well I know that in every practical detail of our profession, many of those before me are more competent to instruct me than I am to add to their stock of practical knowledge.

It would not serve any good purpose on this occasion to enter into a minute or scientific disquisition upon the abstract principles of Agriculture. Everybody knows already that agriculture is the most ancient, the most honourable, the most independent and useful pursuit that engages the attention of man. I should be unworthy the name of a practical farmer, did I attempt to pawn upon you the doctrine that the farmers' life is one of ease and affluence, and exempt from all the ills that fall to the lot of other folks. You know better than that! You know full well that as soon

as our first parents sinned, the irrevocable sentence was pronounced, "Cursed is the ground for thy sake—in sorrow shalt thou eat of it all the days of thy life; thorns, also, and thistles shall it bring forth to thee: and thou shalt eat the herb of the field; in the sweat of thy face shalt thou eat bread until thou return unto the ground, for out of it wast thou taken: for dust thou art and unto dust shalt thou return." While then we may be disposed at times mentally, or audibly, to curse the thistle, whether a Scotch or a Canadian thistle, let us rather look upon it as much a lasting monument of retributive justice of the Almighty, as is the rainbow in the cloud, of his faithful promise that "While the earth remaineth—seed time and harvest, and cold and heat, and summer and winter, and day and night shall not cease."

Still less do I need to impress upon you that agriculture has, in our own day and in a variety of ways, made wonderful advances in all parts of the civilized world, or that Canada is not much behind in the march of improvement. We may accept all such allusions to the progress of agriculture as facts, and instead of idle boasting as to the advancement or the capabilities of "our great country," I think we may more profitably spend the time in reviewing a few of those agencies which have ministered to the growth of agriculture, the prosperity of Canada, and indeed to the happiness of the human race. In doing so I shall neither attempt to exhaust the catalogue, nor to enter very particularly into the details of any of them, but in as few words as possible simply bring them before your notice.

It will readily be conceded as an axiom, that improvement in agriculture or in anything else implies of necessity, a *comparison*—either with a previous effort of our own or with the efforts of others in a similar direction, and that these efforts and comparisons tend to one point—PERFECTION—which, though it be very certain that we shall not attain to, must never be lost sight of, if we *would* improve. That which may be called, under certain circumstances, exceedingly good, might, under altered circumstances, be esteemed paltry, and even intolerably bad. A creditable exhibition in the County of Grenville might be set down as a miserable failure did it profess to be an exposition of the industrial resources of the Province of Canada. A Provincial Exhibition may be justly styled "a great and decided success," as compared with former Provincial Exhibitions, and yet an Englishman might honestly qualify his approbation by saying that "it was admirable for a young Colony." Hence it appears to be desirable and necessary that we should have ever before us a *standard* by which to measure our progress. It were, perhaps, unwise in a "Young Colony" to aspire to perfection in agriculture, but in view of the very intimate relationship in which we

stand to Great Britain, it would seem that the modern system of improved British husbandry may be very safely accepted by Canadians as a standard by which to measure our agricultural prosperity, and to which we may look up as worthy of our imitation. This much by way of explanation for the frequent reference to British husbandry rather than Canadian, which may occur in my remarks.

Up to the beginning of last century the agriculture of Britain remained in a most deplorable condition. Very little wheat was grown in Scotland at all before the beginning of this century, while it is recorded that in the year 1723 the average return of all grains in the District of East Lothian, now one of the best cultivated and productive portions of the Kingdom, did not exceed three bushels for one sown!

The first systematic attempt at improvement in Scotland appears to have been made by an association of land-holders, who, in 1723, formed themselves into a society under the title of "The Society of Improvers in the knowledge of Agriculture in Scotland." It was under the patronage of the Earl of Stair, who is said to have been the first to introduce the culture of turnips into Scotland. This Society was, however short-lived; it failed to attract the attention of the tenant-farmers, for whose benefit it had been established, and who were doomed to another half-century's servitude to ante-diluvian prejudices. Upheld for twenty years, with considerable spirit by the nobility and landed gentry, it was at the end of that time abandoned as a fruitless attempt.

The husbandry of England had never degenerated to so low a point as that of Scotland. This was attributable (at least so say Scotchmen) not to the superior intelligence or enterprise of the English farmer, but to the acknowledged superiority of the soil and climate of England as an agricultural country. Be that as it may, we know that the distinguished Agriculturist, Robert Bakewell, who was born in Leicestershire in 1725, and who died there in 1795, did much for the agriculture of England by his persevering efforts to improve the various breeds of live stock. To him we are indebted for bringing to perfection the well-known Leicester sheep, in which he was so successful that some of his rams were let for the season for the extraordinary sum of four hundred guineas.

The Highland and Agricultural Society of Scotland was instituted in 1784, and immediately began a career of usefulness. It proved, indeed, to be literally a model institution, for very soon after its establishment, numerous county societies sprang up all over the country. To this and kindred societies is due the credit of having led the way to the present improved system of agriculture; I therefore notice *agricultural societies* as the first of those agencies to which reference has been made.

The Highland Society has, by giving its attention to a course of improvement, maintained that place in the public estimation which, from the first, it had secured. Its growth has been, if not rapid, at least steady and uninterrupted. At the present time we find the names of nearly four thousand members on its roll, and its exchequer sustained by an annual income of £4000 sterling from its subscribers, in addition to the interest of its capital, which represents a sum of £47,000 sterling.

For somewhat more than half a century after the establishment of this Scottish Society, the great body of the farmers of England remained fast asleep, but when John Bull did awake, it was as the awaking of a giant from his slumbers. "The Royal Agricultural Society of England," sprang into existence in 1838, was incorporated by Royal charter, and took its place at once as the champion and exponent of improvement in England. Its membership includes the most influential men in the Kingdom. Its annual revenues have already reached £10,000 sterling. The most noticeable feature in its character is, that, within its pale, peer and peasant, landlord and tenant, meet together on terms of perfect equality, whilst its operations are conducted on a scale of magnificence, befitting its high position and its ample funds. That great and good man, whose untimely death has cast a gloom of sorrow over the whole British Empire, the late Prince Consort, was President of this Society at the time of his death. He had long been a useful member of it,—a frequent and successful competitor at its annual exhibitions.

The aims and guiding principles of these two great kindred societies are identical. Though each has regulations peculiar to itself, the revenues of both are chiefly expended in premiums. These are divided into two classes: First, for excellence and improvement in the various breeds of live stock, agricultural productions and implements, and secondly, for written reports upon subjects connected with the practice of agriculture.

That a higher motive than the annual distribution of a certain amount of money actuates the Directors of the Highland Society, may be inferred from the rules published for the guidance of competitors. Thus we find that "no money premiums will be paid unless at least *three lots* are exhibited in that class, and not more than one-half of the advertised premium, unless there are six lots at least, in competition." "An animal which has gained a first prize at any previous show is inadmissible in the same class except for a medal," and "any animal that has gained a second money prize can only compete thereafter in that class, for the first prize." Such regulations are evidently calculated to call forth competition, to do away with monopolies, to provoke improvement, and are therefore worthy of our imitation.

With respect to the prizes for reports referred to, for the present year the Highland Society

offers no fewer than sixty prizes for essays and reports upon agricultural subjects, varying in value from fifty sovereigns to five, in addition to a number of gold and silver medals. You might like to know upon what subjects so many prizes are offered. It would occupy too much time to enumerate them all. Some report upon the best and most economical management of a farm; others more particularly describe the most approved method, founded upon actual experiment, of the application of manures or the cultivation of the various kinds of crops, or of the rearing or feeding of stock. A large number of prizes are offered for reports detailing the most approved method of planting and bringing to maturity fruit and forest trees, while still others having reference to mechanics elicit reliable information as to the value of new agricultural implements as well as the method of using them. The amount of money offered for reports during 1862, is 695 sovereigns, equal to \$3,375. What comes of all the reports that must in this way deluge the Secretary's Office? What result follows? Let me tell you: they are carefully examined by juries of scientific and practical men, many of them doubtless come to grief, while those of them that are adjudged worthy of a prize are printed in the Journal of the Society, and so distributed among its members. It may be stated that the journals of these two national societies, composed chiefly of prize essays, stand at the head of our present agricultural literature; the one published quarterly, the other semi-annually. Both are entirely made up of original contributions, and contain a mine of valuable information, which finds its way piecemeal into the columns of newspapers and magazines all over the civilized world.

Perhaps the time has not yet arrived in the history of our county societies when it would be either advisable or practicable to devote much of their funds to the advancement of agricultural literature. I do think, however, that the Provincial Association of Upper Canada, liberally subsidized as it is by the Canadian Government, might do more in that way than it has hitherto done. I think, sir, that the Provincial Association might very safely entrust, if needs be, the encouragement due to quilts and counterpanes, wax-work and worsted work, and raised work, embroidery, fancy needle-work, tatting and tambooning, to the fostering care of county and township societies, where they are certainly very attractive, and will doubtless receive every encouragement, in order that a portion, small though it might be, of the funds of that great and useful association might be annually devoted to the improvement of the minds of our farmers by the diffusion of useful and reliable information, and the encouragement of agricultural literature.

If any one is disposed to question the propriety of such a procedure, it is likely that his exceptions are founded either upon that prover-

bial antipathy to book-farming, which has been erroneously, I think, laid at the door of the practical farmer, or from the conflicting evidence and imperfectly recorded evidence of a certain class of agricultural writers whose ignorance as to the simple, every-day practice of agriculture is surpassed only by their ambition to see themselves flourish conspicuously in print. To the reflecting mind, however, it will appear evident that the kind of writing to which reference has been made, must possess an intrinsic value of its own, ere it can find a place in a journal of acknowledged authority. The fact of fifty or twenty-five, or even five sovereigns being offered for an essay upon a given subject, will ensure competition, while the scrutiny and approval of the board by whom they are examined, afford the best guarantee possible that what you read in the prize report is reliable. A capital safe-guard are such reports when placed between the rash experimenter and the illiterate, yet enquiring practical farmer. Let me give you a simple, very homely illustration of this: Not long since I was conversing with a farmer who in most things displays a good deal of intelligence. Conversation turned upon the difficulty of growing apple trees, and the cause of their decay. I asked him if he had tried any remedy. "Tried anything?" said he, "Why neighbour, I have tried *every thing*, and now I am fairly discouraged. My last experiment was this: When at the store one day I met with neighbour A—, and he told me my young apple trees were all dying off; he said *his'n was, too!* but that he had just heard of a plan of saving their lives, in which he had great faith, especially so because it came from 'Mr. so-and-so,' a man in which he had every confidence, and who knew *a great deal about apple trees*. It was simply this: to cut off the trees to the level of the ground, and in a short time the old blackened and shrivelled stem would be replaced by a vigorous, healthy young shoot from the old root. I had," he continued, "two hundred young apple trees,—they were not doing well, and, to cut a long story short, the first thing I did on coming home, was to cut off every one of their heads; there was not one that survived the operation. From that day to this I haven't seen the first shoot, so there was an end of my trees and my experiment." Now here is a subject which at this present time would be a very fitting one for an elaborate report, and if the Agricultural Association of Upper Canada would offer a liberal prize for the best essay on the cultivation and treatment of the apple tree, having special reference to the disease which is now devastating our orchards, and threatens soon to annihilate them, I think, sir, some more humane and probably successful treatment would be suggested, than that of chopping off their heads.

The purposes, then, to which these National Societies of Scotland and England apply their money, differs somewhat from the Canadian sys-

tem. In our Canadian exhibitions a great deal is done for effect, and much money is spent in decorations to please the eye, while in Scotland it would be considered *infra dig.* to embellish the ground otherwise than by a fine display of live stock, showing the nearest approach to perfection in breeding, and of agricultural products of extraordinary excellence. A Canadian visiting the show grounds of the Highland Society, might first very naturally enquire and look for the "Ladies' Department," but he would look in vain, and say, Mr. President, what would *your* show have been to-day without the ladies' department?

Well might his Excellency the Governor General say, on visiting the Upper Canada show, that there was little to choose between it and the great national show of Britain. Indeed to the casual observer the Canadian Provincial Exhibitions are more attractive, and while there are many points in which we fall short, there are minor points, to us important ones, in which we even excel. I have particular reference to dege tools and the smaller kinds of farming implements, many of which, as made in Canada, are decidedly better adapted to our use than the corresponding English implements.

But there is another point of difference between our Canadian agricultural societies and those of Britain, more remarkable than any that has been noticed. Not only the national societies of Scotland and England, but all the county and branch societies are SELF-SUPPORTING. They do not receive—they do not ask from Government one farthing for their support. How do they raise their funds? The Highland Society its \$20,000 per annum; the English society, more than double that amount, by voluntary contributions. The benefits accruing to the country from their operations are so self-apparent that it needs no *bribe* to induce the farmers to become members; neither do they require, like some of our members, even with the bribe, to be dragged into the Society; on the contrary it is considered an honour to be admitted a member; so much so that a candidate for membership must be proposed and seconded, and thereafter elected by ballot at some one of the monthly meetings of the society. Does any one tell me that such a result, though attainable in "the old country," cannot be looked for in a new country like Canada? Let me point him to our neighbours across the St. Lawrence. I am not aware that the inhabitants of St. Lawrence county receive one cent from their State Government in support of agricultural societies, and yet, from all I can learn, agricultural societies not only exist there, but are supported with a spirit worthy of our imitation. Looking at the matter in this light, I have often been led to doubt whether our local agricultural Societies are really standing upon the firmest foundation. The fact that we find an agricultural society in almost every township of Upper Canada, does evidence solicitude on the part of our govern-

ment to advance agricultural interests, but it does not afford evidence to my mind that as a people we are above all others interested in agricultural improvement. It *may* be so, and it *may* be that we are influenced by a much less worthy motive—to secure an equal distribution of the dollars and cents. Why, sir, I firmly believe that if the Canadian Government could be induced to sanction a still further—more infinitesimal sub-division of the public grants to agriculture, that we would, ere long, have an agricultural society in every school division of the Province. I do not make the sweeping assertion that improvement is incompatible with township societies. Some of them I am glad to know are doing good; I merely give it as my matured opinion that more good would result to the agriculture of Canada were a larger proportion of the public appropriation placed at the disposal of county societies.

All civilized nations have, in all ages, fostered agriculture as an honourable and indispensable employment of man, and the position which the Government of Canada has thus early assumed in relation to agriculture, is an indication that our rulers are alive to the vast benefits which an enlightened system of husbandry, together with a general diffusion of sound agricultural knowledge, must confer upon the country; and it is a just matter of pride for Canadians that they can boast of such an organization as takes the oversight of the agricultural interests of the Province. In connection with the Government, Canada possesses a special bureau of agriculture, provides for a professor of agriculture in the Provincial University, and expends annually from the public chest, \$111,000 in aid of agricultural societies.

In the United States, up to the present time, the Agricultural Division of U. S. Patent Office has been the only visible or appreciable agency of this great and essential interest. This agency comprises as its personnel, a Superintendent, four Clerks, and a Curator or Gardener, and its average annual expense has been the paltry sum of \$53,000. In other words, Canada gives to every man, woman and child of her population the annual sum of 4½ cents; the United States gives the sixth part of one cent to each individual of her population, towards developing the resources of that country.*

In justice to the Superintendent, however, it must be stated that he remonstrates loudly against the inconsiderate and miserly policy of his government, and urges them to liberality commensurate with the importance of the purpose aimed at. In respect to the *mode* in which the American Government encourages agriculture, "the report" tell us that "from the 31st of December, 1860, to the same date 1861, 2,474,380 parcels of garden and flower seeds have been distributed of doubtful value; several varieties of flower seed were procured which have not been distributed, but destroyed because of their objectionable qualities, some of them

* There are also the separate State appropriations.—[EDS.]

being noxious weeds. About 1000 bushels of wheat imported from Europe have been distributed, with what results not known. Oats and barley of a superior quality have also been distributed, *in what quantities not told*. The Osier Willow has been propagated most successfully, and 45,000 roets and cuttings will be distributed the present season."

England, it is true, has no special bureau of agriculture, but the spontaneous liberality of a wealthy aristocracy renders it less needful, and yet the government expenditures in favour of agricultural improvements are upon a magnificent scale. The respective Governments of Russia, Austria, Prussia, are fully alive to the importance of aiding agricultural literature, and arousing a spirit of emulation, generous rivalry, and *enquiry* in connection with the all-important branch of industry.

To be continued.

Horticulture.

FRUIT GROWERS' ASSOCIATION OF UPPER CANADA.

The Annual Meeting of the Fruit Growers' Association of Upper Canada, was held at the Mechanics' Institute, Hamilton, Wednesday, January 21st, 1863.

The President, Judge Logie, took the chair. The minutes of the last meeting were read and approved. The delegate from the Western N. Y. F. G. Society, Mr. E. Moody, of Lockport, was introduced by the President and requested to take part in the proceedings.

The report of the committee to which was referred the answers received to the questions issued by the Association was then read. The report embraces the substance of nearly seventy replies received from thirty different counties, containing a large amount of very valuable information in relation to the different varieties of fruit in the several parts of the Province. When finished it will make a pamphlet of about forty pages. The meeting listened to the reading of the report with much interest and ordered it to be printed as soon as the necessary funds can be procured.

The President then read the annual address, which was received with applause, a vote of thanks unanimously carried with the request that he will please furnish a copy for publication.

The meeting then proceeded to the election of officers for the ensuing year, with the following result:

President, Judge Logie of Hamilton,
1st Vice President, George Leslie, of Toronto,
2nd Vice President, Charles Arnold, of Paris,
Secretary and Treasurer, D. W. Beadle, St. Catharines.

FRUIT COMMITTEE.—J. C. Small, R. N. Ball, W. Holton, J. Freed, G. Laing.

PUBLICATION COMMITTEE.—D. W. Beadle, James Taylor, W. McGiverin.

On motion of Mr. McNab, seconded by Mr. Laing, it was resolved that the meeting in July next be held at Toronto, and that the meeting in November next be held at St. Catharines.

On motion of Mr. Laing, seconded by Dr. Craigie, some changes in the present prize list of the Agricultural Association were approved, and the Secretary directed to transmit a copy to the Board of Agriculture with the request that they would be pleased to take them into consideration in making up the prize list for 1863.

The President, Vice Presidents, Secretary and Dr. Craigie were appointed a committee to take such steps as were necessary to place the Fruit Growers' Association on the same footing with agricultural societies.

Messrs Laing, Leslie and Beadle were appointed delegates to the Western N. Y. Fruit Growers' Society.

The subjoined paper on grape culture by Mr. Arnold was read, a vote of thanks carried, with the request that he would continue the subject, and give the Secretary a copy for publication.

A continuation of Mr. Laing's paper on general culture and management was read, for which he received the thanks of the meeting and was requested to furnish a copy for publication. It was resolved to take up the subject of small summer fruits for discussion at the next meeting.

Mr. Johnston of Norval exhibited a sample of wine manufactured by the Hon. Peter Adamson, of "Toronto House," from the juice of a grape which he imported from the Peninsula. The name of the grape was unknown to Mr. Johnston, but as it had proved hardy and was thought likely to be a valuable variety, the association recommended that it be known provisionally as the "Adamson Imported Grape," until its true name can be ascertained.

Some colored drawings of fruit were exhibited by Mr. Moody, delegate from the Western N. Y. Fruit Growers' Society, very nicely executed by Mrs. E. Bennet, of Lockport, New York.

Very fine samples of the King of Tompkins County Apple were sent to the meeting from the Western N. Y. Fruit Growers' Society by Mr. E. C. Frost, of Havana, New York.

Mr. W. H. Mills, of Hamilton, exhibited six varieties of apple, including fine specimens of the Ribston Pippin, Northern Spy and Golden Russet.

Mr. A. Alexander, of Hamilton, sent several very nicely kept bunches of Isabella grapes.

Mr. C. Arnold of Paris, exhibited six varieties of winter pear, and a sample of wine from the Diana grape.

Mr. Craigie exhibited samples of the Ancaster seedling apple.

THE PRESIDENT'S ADDRESS.

GENTLEMEN,—I have to congratulate the Association on the progress made by it during

the past year. At the annual meeting in January, 1862 the Constitution and By-Laws were revised and adapted to the wants and condition of the Association; in the amended constitution provision was made for holding meetings in July and November, at such places as the members might determine at the annual meeting in January. The meetings last year were held at St. Catharines and Toronto, and I have no doubt but that by occasionally changing the places of meeting the interest felt in the Association will be increased. The meeting at St. Catharines in July last was a most interesting one, the attendance of members was larger than at any previous meeting, and the display of summer fruits (particularly of cherries,) the best probably ever exhibited at one time in Canada. The meeting in Toronto was also well attended, and the display of apples very good; at that meeting a paper was read by Mr. Laing, on the management of orchards, an important subject in connection with the cultivation of fruit.

Considerable progress has been made during the year in making up the list of fruits suitable for cultivation in Upper Canada; the different kinds of grape, cherry, gooseberry and plum have engaged the attention of members at the meetings, and those approved of have been added to the Society's list of fruits.

Last winter several members of the Association expressed a wish that there should be some representation of the fruits of Canada at the great International Exhibition in London. As perishable articles such as fruits were not admitted, a representation of our fruits could only be made by means of drawings colored after nature: a subscription to defray the expenses of such a collection was taken up, and the Secretary was authorised to procure such colored drawings. They were procured and sent home to the Exhibition, where they attracted a great deal of attention, so much so that a request was made by the Secretary of the Royal Horticultural Society to the Association through Dr. Hurlburt, that we should send a collection of our fruits for exhibition at a grand International Snow of fruits, to be held at London on the 10th of October last. The Association, however, felt that as only our late autumn and winter fruits would bear the lengthened journey, and at that season an exhibition of our winter fruits which would do justice to Canada could not be made, they should decline as a society to send specimens of fruit. A collection of fruit was, however, sent by the Hamilton Horticultural Society to a subsequent exhibition which attracted great attention and admiration, and was said to be the finest collection of fruit from any one country, ever exhibited at one time in England and a medal was awarded by the Royal Horticultural Society for the collection, so that the efforts of this association followed by those

of the Hamilton Horticultural Society have had the effect of directing attention in England to the climate of Canada, and must have led to more correct views of the climate and to the belief that a country which could produce such fruit could not be the cold, bleak, inhospitable waste of snow and ice which many Europeans supposed it to be.

Although we have a fair increase in the number of our members during the past year, that number ought to be greatly increased; much may be done by members in different localities bringing the claims of the Association under the notice of their acquaintances and neighbors, and inducing others to become members and take a part in our discussions. In order fully to carry out the objects of the association, our proceedings, particularly the reports of the Fruit and publication committees, and our list of fruits, should be published in pamphlet form for distribution. Our funds at present are not sufficient to enable us to do that, and I would suggest that an effort should be made to get this Association put upon the same footing as Horticultural Societies, in the Agricultural Bill to be brought before Parliament at its next session.

It only remains for us as a Society, and as individuals, to do all in our power to carry out the objects of the association, and thereby assist in developing the resources and increasing the prosperity of the country.

ON GRAPE CULTURE.

BY MR. C. ARNOLD, OF PARIS.

Mr. President and Gentlemen of the Upper Canada Fruit Growers' Association—

To sit under our own Vine with none to make afraid, is perhaps the most ancient idea on record of a life of security, contentment, and peace; and if any portion of the human family can at the present day lay claim to this species of comfort, so happily prized by our patriarchal forefathers,—if it is not the inhabitants of the south western portion of Western Canada, under the flag that has braved a thousand years, in the mild and virtuous reign of Queen Victoria, with our bright, warm, and salubrious summers—I think, Mr. President, if we are not that people it is a difficult matter to say where they can be found.

Thanking this Society for the high compliment paid me, in their unanimous invitation to prepare a paper on the open air cultivation of the grape, I shall, in accepting the invitation, not bore the gentlemen present with a long, prosy article on preparing the ground, planting the vines, &c., but confine myself on the present occasion chiefly to the more pleasing toil of answering that oft repeated question, viz., Can Canada ever become a profitable Grape and Wine growing country?

If this question could not be truthfully answered in the affirmative, it would be useless occupying the time of this society, in discussing the subject at all; but after fifteen years experimenting in various ways, I do not hesitate to answer emphatically, yes; the grumblers and croakers from the sunny south to the contrary notwithstanding.

Allow me then to give a few facts and inferences that have enabled me to answer this important question, in a manner so satisfactory, at least to myself.

1st. The success of Canadian Grape growers, as compared with those much to the south of us. Especially will this comparison hold good in our favour when applied to the *foreign* varieties of the grape. I am fully borne out in this statement by private letters in my possession from some of the most eminent Horticulturists in the United States.

2nd. Humboldt, the great Naturalist, gave it as his opinion, that the cultivation of the Vine would succeed if the annual mean temperature was as low as 48°, provided the summer heat rises to 68°.

Many arguments might be adduced to prove that the grape could be successfully grown in Canada, but I will give only one more at present, one that will, in my opinion, hold good in all countries, and with all species of fruit, viz.: In whatever part of the earth the original species of any fruit is indigenous, there that fruit can be raised to perfection, provided the inhabitants have sufficient intelligence to recognize the existence of the organs of fructification in the vegetable kingdom. And, surely Mr. President, no one who has ever taken a stroll along the banks, the hill-sides and valleys of some of our noble rivers, and has cast his eyes upwards, and seen in the tops of our tallest trees such large quantities of well-formed bunches of fruit, branching out from those long, strong, serpentine old trunks, that have for many, many winters bid defiance to 20° below zero, will ever attempt to deny that the grape is indigenous to Canada. Nor will any one, it is presumed, deny that the larger portion of Canadians at least possess this intelligence.

But I shall not now urge the necessity of going back to those noble old wildings in our woods, for parents to cross-breed from, for fortunately much has already been done by those gentlemen who have raised or introduced such varieties as Delaware, Rebecca, Concord, Hartford Prolific, and the now called Ontario or Union Village, not forgetting the good old Sweetwater, Black Hamburg and Black Prince.

From these varieties let us start, and let us dust the pollen of one variety that possesses the flavour that we desire, upon the pistil of the one that possess the earliness, hardness, and size that we desire. And I assure every gentleman who has not experimented in these matters that he will be agreeably surprised at

the result; and there is not, I insist, so many difficulties in the way of cross-breeding as many persons imagine. That it requires a rather delicate hand, and to be done exactly at the proper time, I freely admit, but that the two varieties to be crossed will require to be in flower exactly at the same time, is a question in my mind. I am very much inclined to believe that the pollen of the grape will retain its powers of vitality for a considerable length of time, if kept from the air. I do not assert this positively, but merely give it as my opinion, after having kept some pollen of the Black Hamburg and Syrian, for upwards of a year, and then placed it under a microscope, without being able to perceive any apparent differences.

There is also a singular instance recorded in Rhind's History of the Vegetable Kingdom, which goes to show that my opinion is entirely unfounded.

The Persians, it is said, had their country, in a war, overrun by their enemies, who cut down all the *male date trees* of a whole province; "but the inhabitants, apprehending such a result, had been careful previously to gather the pollen, which they preserved in close vessels, and thus they were enabled to impregnate their trees when the country was freed from the destroying army. It is said that the pollen had thus preserved its powers during 19 years."

But, Mr. President, I feel that I am upon a subject that has not been assigned to me. My mind, however, has been so long impressed with the great importance of cross-breeding, that I could not resist this opportunity of trying to impress it upon the minds of those gentlemen to whom the country very naturally looks for leaders in these matters.

In fact, Sir, I believe that Canada will never arrive at her full stature of manhood in fruit-growing until we shall cross-breed with our wildings, not only grapes, but raspberries, gooseberries, and perhaps many other fruits; and then, if this society shall continue its exertions, I feel persuaded that in less than 20 years we shall have grapes in size equal to those of Eschol, combined with the flavour of Delaware and Black Hamburg, and the hardiness and healthfulness of the frost grapes of our forests.

The essence of all that can be said on grape culture in Canada might perhaps be summed up in the following few brief sentences, viz.: That the grape vine should be protected from the north, well open to the south; that the soil should be deep and well drained, that it should be thoroughly pruned in the fall, and also summer-pruned, and covered during winter.

And there is not a farmer in Canada West, and scarcely a person who occupies a house in city, town, or village who has not a suitable place for grape vines; either on the southern side of a hill, or on the south side of some building or tight fence, and they will be sure

to meet with a measure of success, with such varieties as Delaware, Hartford Prolific, Ontario, Rebecca, Concord, Diana, and a few others.

And as a proof that wine can be made from grapes of Canadian growth, a sample is before you, gentlemen, of the pure juice, without any addition of sugar or alcohol.

When the foregoing was written it was not my intention to have entered into the minute details of grape culture, but, through the solicitations of several gentlemen, both Horticulturists and amateurs, whose opinion I very highly prize, and in view of the great losses and disappointments of the Canadian people, through procuring, in many instances, worthless plants, and also their lack of knowledge of the treatment that the vine requires, I have been induced to enter into such a detailed description of grape culture, as will enable every amateur to prepare his own grape border, and to know what, when, and how to plant, prune, &c. Therefore, let us begin by selecting

The Site.

Wherever the garden is bounded on the north by a tight fence, either of wood, stone, or brick, the south side of this fence would in most cases be the best place for grape vines; if a brick or stone wall be ten or twelve feet high, so much the better. A south-eastern or south-western exposure will either of them answer, and will each of them have their advantages, arising partially from their local influences; if, for instance, it is in some elevated section of country, entirely exposed to prevalent cold westerly winds, they would no doubt be injurious to the tender shoots, and to the blossoms in the months of May and June; and they would also considerably retard the bursting of the buds, which, in case of severe frost late in the spring might secure to the owner a crop of grapes, whilst perhaps his neighbour, whose vines had been protected from the cold wind, and had received the genial influence of the early morning sun, would be two weeks earlier, and consequently all cut off by this untimely frost. But, on the other hand, if protected from the westerly wind and through the influence of a considerable body of water, (or any other influence) on the south or south-east, the frost is kept off, the south-easterly exposure would have decidedly the advantage. I am well aware that there is a prevailing notion amongst many intelligent people, that an easterly exposure is more subject to mildew and blight than any other; such may be the fact in some countries, but it is doubtful whether such is the case in the interior of Canada. It is not absolutely necessary that all grapes should be trained against a south wall or fence, for some varieties will succeed and ripen their fruit well on the open trellis. And there are many crescent-shaped openings in the south side of many of our lime stone gravelly ridges, with the horns so projecting as to break both

the easterly and westerly winds; these openings, one would almost suppose, had been designed by nature for our Canadian vineyards.

Preparing the Soil.

When it is considered that the roots of the grape run within two inches of the surface of the ground, the necessity for preparing the ground thoroughly before planting the vines will be evident to every one. In the first place then, let the ground be well drained; if not so naturally, let it be made so artificially; if the subsoil is a light sand or a loose gravel it will need no other drainage, but if otherwise, let a drain be made, either of tile, brick, or of stone, for without thorough drainage it is impossible to get a good flavoured fruit. That some varieties can be made to grow for a time, in a half-drained swamp, and produce enormous growth both of wood and fruit, I shall not deny, but their permanent healthfulness is very doubtful, and the size of the fruit is always at the expense of the flavour. If the portion of ground allotted to grape vines shall of necessity be in a low portion of the garden, it will be advisable to raise the grape border a little above the adjoining ground. Let the border be at least 18 inches deep, if two feet so much the better. One-fourth rotten sod, one-eighth well rotted barn-yard manure, and, if there be no lime in the soil, a little air-slacked lime, and a good sprinkling of bone-dust, mixed well through the border; this, with ordinary soil and a quantity of old bones near the bottom, will make a good grape border; if the soil is naturally inclined to clay, let all the additions have as much sand as possible, and more lime. But of all things avoid stinking dead carcasses. Some people seem to think that the more filth of this kind the better, and that the vine delights to live in something like a slaughter house. Thousands of newly-planted vines are no doubt killed annually by this kind of so-called manure; that there are carnivorous animals in America there is no doubt, but the existence of carnivorous plants is a question. The width of the border should not be less than 10 or 12 feet, but if it is not convenient to prepare it the whole width the first year, the half of it might be left until the next, or even the year follow; if, however, only half of the border is prepared at first, neither plants or flowers should occupy any portion, but the vines should have sole possession.

The right kind of Plants, when and how to Plant them.

There perhaps is more difference of opinion on these points than any other connected with grape culture. Some persons prefer three or four year old strong layers; and others plants started from single eyes, in a propagating house in the winter, regularly repotted so as to receive no check, and then, towards the last of June, finally planted out in the grape border. That the large layer will bear a few

miserable little bunches of fruit, there is but little doubt. And that the little four-months' old plant from the single eye will eventually make the finest and healthiest vine, and bear the best bunches of fruit, is, I think, equally certain; but the kind of plants to choose must depend very much upon the season of planting, and perhaps, on the whole, the plants most likely to general satisfaction, are those that have been started from single eyes in the spring, and then transplanted into the open nursery for one summer. These plants will now be in good condition for moving, either in the fall or following spring. If planted in the fall, October is the best time, and if persons who are transplanting in the fall will take the pains to mulch the border with stable manure, and towards the last of November cover the vines entirely over, fall planting for such vines is preferable; but if the vines are not thus cared for they had better be left in the hands of the nurserymen until spring. The months of April and May are best for spring planting of vines whose buds are not started; but whatever season is chosen let the ground be mulched at the time, to keep out the frost of early winter and the drought of summer. If the vines are planted under a wall or fence, a foot from the wall and from four to six feet from each other is a good distance. On the subject of pruning, a volume might be written; but the object aimed at in pruning is to get but few canes, and those to be strong new wood; therefore, encourage only one or two shoots the first year, and cut these down to within two or three buds of the ground in the fall. Allow no cane that is smaller than the little finger to bear fruit, and allow no fruit-bearing branch of the current year to bear more than one bunch of fruit the second or third year after planting, and not more than two or three bunches in any after year. Pinch off the fruit-bearing branch at three or four leaves beyond the last bunch of fruit, and pinch off the summer shoots with the finger and thumb occasionally through the summer.

These few hints, it is hoped, will be of service to the amateur, and they are not intended to instruct any one else.

ON THE CULTURE AND PRUNING OF FRUIT TREES.

BY MR. GEO. LAING, OF HAMILTON.

MR. PRESIDENT AND GENTLEMEN.—In compliance with your request, and in fulfilment of my promise, I now continue my former paper on Fruit Culture, and bring before you, as briefly as I can, a few practical hints on pruning and training fruit trees. Believing the dwarf system to be the most productive and best, my remarks will more especially refer to that mode. The old adage "Every man his own gardener," is verily fulfilled in the pruning and training of trees; it is an operation on which

practical men have differed much, and do still, as to the time and manner, but all agree on its necessity and importance. It cannot be learned by rote, but only by a strict observance of trees, their natures and habits of growth, &c. Fruit trees must in some measure be treated as they are naturally disposed to grow and produce their fruits. Some produce it on the first year's shoot, such as the vine; others oftenest on the former year's wood, as the peach and nectarine; apples, pears, plums, cherries, &c., upon spurs produced from wood of three, four, or five to fifteen and twenty years old. When fruit trees are well managed, provision is always made to have a regular supply of fruit-bearing wood, but taking care to have nothing superfluous to exhaust the strength and cause unfruitfulness and premature decay. The main object of pruning is to keep the trees in a strong and healthy state of productiveness, also rendering them more pleasing to the eye, and causing them to produce larger and finer fruits. When a tree is planted in a good soil and other favourable circumstances, it will produce luxuriant growths and push out vigorously in all directions, not more than the roots will feed, but many more than can have their foliage duly exposed to the light. One of the most important points in pruning is to regulate the trees, so that the foliage may have plenty of light and air. As the growth of all plants and trees depends upon the amount of foliage or leaves that is duly exposed to the light, it is evident that any reduction of the branches or shoots that bear the leaves must tend to diminish the increase in bulk of the tree, so that the effect produced by the removal of certain parts, is to give a greater share of sap and light to the parts left. The greater flow of sap and the more abundance of light that the tree will then receive will cause the shoots to be much stronger and better, the buds in the axils of the leaves to be full and plump, and more disposed to produce stronger spurs or fruit buds as the case may be.

Having thus so far noticed the tops of the trees, I will now turn attention to the roots, and endeavour to point out the way and means by which the trees may be kept in a regular bearing state. Many of our fruit trees, when favourably situated, are sometimes more apt to run to wood than to produce fruit. In such cases root pruning should be had recourse to, and likewise when trees are to be continued in a dwarf stature, or of fancy forms, for the garden, sides of walks or such like places. These kinds of trees are particularly well adapted for those who may have only a small piece of ground. If the trees have been worked, that is, grafted or budded, on proper stocks, and rightly attended to in top pinching and pruning, they will be very easily managed, either in the garden or orchard. In orchards under dwarf culture the trees are generally grown to a larger size than in the garden, and root pruning may not be so often required; but by many it is regularly practised and found

to be most beneficial. Many years ago it was only had recourse to to bring strong and barren growers into a bearing state, and when properly performed, rarely failed in producing the desired effect. When full-sized, grown-up trees, that have never been root pruned, require it, great care must be taken, and the operation performed by degrees, so much one year and so much the next, until the whole be completed. As I have already stated, root pruning in all cases must be carefully performed, and at the proper time, that is soon after the fruit is gathered. For young trees cut a trench, say eighteen inches or two feet from the stem of the tree, examine the roots carefully, and those inclined to perpendicular growths downwards cut them by the spade, making sure that none escape amputation; all the horizontal roots should be cut or shortened by a knife, eighteen inches or two feet from the stem, and the trench again filled up with a prepared compost of good turf and rotten dung, of equal parts, well tramped down, then mulch all over the space above the roots and around the tree with good stable yard manure. Some practice annual root pruning, others bi-ennial. Many prefer doing the one half of the root the one year and the other half the next: this I do, and am satisfied it will be found sufficient in most cases.

TRAINING.—There are various forms in which the fruit tree is trained, on walls, espaliers, &c.; some horizontally, others wavy, or curvilinear, oblique, fan, stellate, and pendulous, also pyramid and bush form, for the open garden and orchard, to which my attention in the meantime is principally directed. It is necessary to remark that all varieties, either of the pear, the apple, or other kinds of fruit, are not all eligible alike for pyramids and bushes, as they are termed. Pears and all other kinds of fruit trees differ greatly in their habits and growth. Some incline to grow compact and neat, others horizontally or bushy, and some very thin and slender. Whatever the fancy may be as to the shape that the tree is to be trained, the varieties best suited should be selected; those of compact, erect habit are the best for pyramids; the horizontal growers, or those of a crooked nature, for bushes; the thin and slender growers, of whatever shape they are to be or may be made, require to be well attended to when young, as they are all with few exceptions apt to be furnished with dormant buds on the lower part of the branches; this, by early short pinching may be greatly obviated. It is very desirable to have all trees that are purposed to be of small stature on dwarf stocks—the pear on the quince, the apple on the English crab and Paradise stock, the plum on the sloe, the morella and duke cherries on the mahaleb, the bigarreau and heart cherries on the common cherry stock. The pear, the apple, the cherry, and all of the other varieties mentioned, are well adapted for dwarf culture, which has been admitted, by all who have practised it extensively, to be the most interest-

ing, the most profitable, and the best. The plum in a rich soil rapidly forms a pyramid; it can scarcely be managed by summer pinching, as it is of such a rapid growth. It is however a tree whose roots keep near the surface, and can easily be kept down by annual or bi-ennial root-pruning, whichever may be adopted. Cut all the roots, as has already been directed, and as the tree advances and years roll on, every time the roots are pruned cut within a few inches of the former stump. Some cultivators approve of removing the trees annually, if the soil be rich; bi-ennially, and adding some rich composts, if it be poor. This is to be done without root pruning, commencing the second year after planting, performing the operation in the end of October or the beginning of November, as the tree may be found in condition. Lift them carefully, preserving all the roots unless any stragglers, then make the hole, from whence the tree was moved, a little deeper and of sufficient breadth to receive the roots at full length; place a little of a prepared compost of loam and rotten dung in the bottom, then place the tree in the centre and carefully spread out all the roots and cover them over with a little of the compost; when that is done fill in the common earth and tread it down firmly with the foot, then mulch all over as before directed.

Summer pinching, to which reference has been made in the previous remarks, is an essential operation, and, as it may not be understood by all, I shall here shortly notice the time and manner of performing it. It is done by the finger and thumb, and by a timely use of them the tree may in a great measure be summer pruned. In exemplifying this operation I shall endeavour to be as plain and clear as possible, using for my subject a young pear tree of one year from the bud or graft, say for a pyramid. A good, well rooted plant, with a single upright stem well furnished with buds, is selected. The first spring head it down to within eighteen inches of the ground; if the soil be rich it will produce five, six, or more shoots, one of which is to be made the leader, and if not quite erect it must be made so by fastening it to a stake, and as soon as the leading shoot is ten or eleven inches long stop it by pinching off its end; if it pushes forth again two or more shoots pinch all off but one to three leaves, leaving the topmost for a leader. The side shoots in general assume a regular form, should they not do so stake them into it, taking care not to have them too close; they may thus remain until the end of August or the beginning of September, when they may be shortened to eight, ten or more buds, as may be found necessary to the formation of the tree. The second year the tree will make strong vigorous growth; the side shoots that were stopped last fall will push out three, four, or more shoots. In June, or as soon as they have made four or five leaves, pinch them off to three leaves, leaving the leading shoots of the side branches unpinned, to extract the superabundant sap till

the end of August. I would remark here that as fruit trees differ in their habits—some varieties making strong and vigorous shoots, others, under precisely the same treatment, weak and slender—this must be noticed in the final shortening in August, those that are vigorous must not be cut so short as those that are less so. The fact is every variety requires some little modification more or less, which experience alone can teach. Year after year continue on in this manner, taking care to keep your trees in a proper form, open and free for the circulation of air. Be careful in dressing back spurs, and in renewing branches where necessary. The apple, Plum, Cherry, &c., may all be treated in a similar manner for pyramids.

The bush tree, so called, is well adapted for all situations, if the climate be good. It is much to be commended for high, exposed places, not being much subjected to high winds. Some varieties of the pear, the apple, and other fruits are naturally inclined to be bushy and dwarfish; some of the other fruits are likewise so. The horizontal and crooked growing sorts are the best for this purpose and can very easily be brought into shape. The bush tree may be grown from four to six, ten, or twelve feet high, and of a proportionable breadth. Some prefer to have them broader than they are in height: it is as fancy may direct. The bush tree is treated similar to the pyramid in pinching and pruning, but with a difference in training; in this case no leaders are required, all the branches are naturally drawn out, pinched regularly, equally branched, but not crossed in any way. With the bush as with the pyramid sufficient openness must be kept in view.

When I commenced this paper I fully intended to have made a calculation on the produce of one acre, in apples or pears, under the dwarf system, and one under the common or general wide planted standard principle, and to have noticed the comparative value of their fruits; but this I must leave for the present, and conclude with a few remarks on the state of orchards in general throughout the country. I cannot help saying that their condition, with a few exceptions, is anything but creditable; in many cases the fences—imperfect as they are—have to take care of the orchard, and the orchard has to take care of itself. The trees are crowded with saplings, fruitless branches, extracting and exhausting their substance, excluding the light and air so essential for their health and the maturation of their fruits; the old trees full of dead and dying wood, suckers, &c. their trunks and limbs all covered with moss or decayed bark, excellent receptacles for the aphid and other pests;—such a state of affairs is enough to make one say hard things. All orchard owners would find it much to their advantage to keep their orchards clean, their trees free of dead wood and useless saplings; very little time need be spent in doing this, if judiciously gone about. Early in spring take a sharp draw hoe, or some like instrument,

scrape and clean the trunks or stems and limbs of all the moss and dried bark, then wash them over with a thin solution of Gishursts' compound, say six to eight ounces to one gallon of water, or with soft soap, destroy all root suckers and mulch over the roots regularly. A little attention in this way will be amply rewarded.

Hamilton, 20th Jan., 1863.

AT THE DWARF APPLE TREES AGAIN.

TO THE EDITOR OF THE AGRICULTURIST.—Well, Mr. Editor, I suppose brother Arnold has been looking very anxiously in every number of your valuable paper for a reply to his last remarks on dwarf apple trees, but the want of time, and not of matter, is my only excuse for not furnishing it before this time. But now, the plough-boy has laid by his plough, and the winter evenings are long,—therefore, Mr. Editor, through your indulgence, we will have another sociable chat with Mr. Arnold about dwarf apple trees.

He first says, he has not time or inclination to devote much more time to it, I suppose for the want of a better foundation to stand upon. He next says he will not defend those nurserymen that have humbugged Mr. Werden. This being admitted, that they have cheated me, this point is gained. Now, Mr. Editor, is it not evident that if they have humbugged me they would do so to others? Rather a grave charge, Mr. Arnold, against the nurserymen, but if so I have abundance of proof from my neighbors, whom I have influenced to get those so-called dwarf trees, but which are now growing large trees, just like mine, and without bearing fruit when small.

Let us turn to Mr. Arnold's defence of dwarf apple trees. I don't deny that the Horticulturists speak of dwarf trees. Rivers, Johnson, and Neill, LL. D., Secretary to the Royal Caledonian Horticultural Society, speak of three kinds of stocks, the French, the English, and the Dutch, and all differ in size. What does this amount to? Why that the more skilful the cultivation the smaller will be the trees. So says the *American Agriculturist*, and so I say. You may recollect that I suggested to Mr. Arnold that he had better get his dwarf trees a little smaller, or we could not call them dwarfs, which you see he has done, and the next time, I suppose, he will have them as small as Mr. Rivers, of England, who had dwarf cherry trees only one foot high bearing a quart of cherries, when a listener put him to the blush by saying that a neighbor had a cherry tree in full bearing which he carried about in his snuff box. Now, Mr. Editor, are we to believe all we read. I gave friend Arnold a hint in my last article how dwarf trees might be made, and how to throw

them into bearing, which plan he does not deny practising, and which, no doubt, was the cause of the trees bearing that he speaks of. For further proof that this is the way dwarf trees are made, turn to Downing's Fruit book, one of the best authors we have on the subject; page 82, and see what Mr. Rivers, an English nurseryman of much celebrity, says on the same point. Turn also to Mr. Coles' fruit book, page 63, where he says frequent transplanting tends to dwarf any tree by retarding its growth, and dwarfs may be made of any tree by root pruning, shortening of the branches, and giving only moderate culture. Those cultivators corroborating each other so fully is enough to satisfy any one how dwarf trees are made, and of the means adopted to throw them into early bearing. But if this is not sufficient we will give you the method of the Chinese, who boast much of their skill in dwarfing trees. We all know how they manage to dwarf the feet of their women and so manage to make them keepers at home; but how they contrive to dwarf not only their fruit trees, but the pines and oaks in flower-pots for half a century, has always been a secret to some. It is also done chiefly by root pruning, planting it in a shallow pot, pruning the top and roots, searing it with a hot iron, barely leaving it room to live; so the little tree finding itself headed on every side gives up the idea of strong growth, asking only for its life. Those dwarf trees all being made by artificial means, *i.e.* by the hands of the skilful cultivator. But if you wish to see natural dwarf trees go to Spitzbergen's cold shores, or to the limits of vegetation upon some snow capped mountain, and there you will see our lofty pines, birches, and willows all made into dwarfs by the cold breath of the frozen region.

The next thing we proceed to notice is Mr. Arnold's refusing to send me the dwarf trees before mentioned. Now, Mr. Editor, I have tried a great many times, and have been to much expense to get such dwarf trees as Mr. Arnold speaks of, but have always failed, which caused me to doubt their existence except by such means as above described. But if there were any genuine natural trees, such as I have not got, this plan I thought would enable me to succeed in getting them; but it fails also. Am I doomed forever to hear the praises of those charming little objects. and never be able to get them, that I might add one more attraction to my experimental fruit and flower garden. I have applied to Mr. Arnold who boasts of having the genuine trees for some, but he turns away, and says, "No, I will not let you have the lovely little creatures to mutilate them, by cutting off their heads and feet." But stop, Mr. Arnold, did you not in your former article lay my want of success to my ignorance in not knowing how to treat them? You said I should

have starved some by putting them in poor ground, and cut the heads off from others, and when I told you I had done so, and had followed the directions of the journals above mentioned, and yet failed in my object, no doubt from not being thorough enough, you now turn about and say, "they are like the rebels in the South, they only want to be let alone." Are you not like the Federals of the North, want it all your own way? Hence you see a drowning man will catch at a straw. Again, he says, he will place his trees in other hands to be tested. Now sir, if you are suspicious of my not giving your trees fair play, have I not the same grounds to object to your offer; for would it not be an easy matter for him to attend to their cultivation, and through artificial means keep them small and throw them into bearing? Hence you see he is determined to dodge every way to keep them out of my garden, as if they were as the Egyptian said of the Lotus, too good and beautiful for any one to have, but must be held sacred for sacrificial offering. But sir, every case in law requires direct proof, and such I demand. Therefore, friend Arnold, don't be so afraid, but send along your trees, and if I don't make fine large trees of them, then I will pay the bill.

Again he says, let us come to the point; agreed to that, friend Arnold, you say you train your trees to bear in 2 or 3 years old—this is perhaps by using the means above described, and what is the use of your boasting about having such trees if we can't get them without so much trouble? Is it not enough to discourage any one? For who would try harder than I have, and yet, I have failed so far, but am not willing to give them up yet, as long as there is any hope or prospect of getting them. Last spring I got 25 from Mr. Smith, of Syracuse, who said he had the genuine dwarf trees—if they prove so I will report accordingly; but I have no faith in them, but what they will turn out like all the rest. For further proof that I have no faith in the reality of natural dwarf apple trees, I refer you again to Mr. Atkins' article in the *Agriculturist* of 1861, page 241, and see his experience. I might call plenty more of my neighbors as witnesses, who are growing these trees for the last 6 or 8 years, and without bearing fruit, but Mr. Arnold would only say they had all been cheated by the nurserymen like myself. Will the nurserymen admit this? Evidently there is a fault amongst them.

The last thing we proceed to notice is, Mr. Arnold's attack upon my Essay. I defined in my last article enough to satisfy any one how I came to overrate the dwarf apple tree, but for further particulars would say, I was led astray by not having as much experience as now, and depending too much upon the authority of others; but I am now willing to make that mistake right, as every honest man

should do, that others may not also be deceived. Mr. Arnold has only quoted a part of what I said in my essay about the profits of dwarf apples, the reply giving it a different meaning entirely. Will you turn to it, Mr. Editor, and fellow farmers, and read it for yourselves, and ask Mr. Arnold why he did not copy it as it reads? Does that say a garden of dwarf trees alone, as Mr. Arnold infers it does, or is it intermingled with currants, raspberries, and strawberries which would help to make the profits I spoke of? And I did not say how large that garden should be; but say an acre, which is not too large for an ordinary garden, and have you not seen reports often and again of strawberries alone producing from 6 to \$800 worth from an acre, to say nothing about the currants, raspberries, and dwarf trees, which would produce as much more when they get old enough? Where will you find more profit from fifty acres devoted to agricultural purposes?

And now, Mr. Editor, in reply to your word of caution about the communications. I assure you there is nothing but the best of feeling on my part, although I may express my sentiments in a plain and off-handed manner, for what else could you expect from a rough bark farmer as I am but to say hard things, when I have been imposed upon by those so-called dwarf trees for the last 10 or 12 years, which are without bearing fruit; and are growing so large that they will soon crowd me out of the garden, and must be cut down to give room for things of smaller dimensions? Would not this try your patience, especially when the nurserymen still keep boasting of having genuine trees, yet won't let us have them? Therefore, my only object is to expose the deception, whether it be in the trees or the men. This, Mr. Editor, is my only excuse.

Yours, &c.,

R. B. WERDEN.

Picton, Jan. 28, 1863.

The Dairy.

MILK.

There are but a few of the natural productions of the animal kingdom more subject to diversity of quality than cow's milk. According to the old saying, "It's what goes in at the mouth that makes the cow;" but the truth of the adage depends upon many other conditions than the quantity and quality of the food consumed. Thus, different breeds are not more diversified than are individuals of every specific breed, and this is equally applicable to the quantity of the milk as to the quality. But singularly numerous as these diversities may be, they are all subject to certain chemical and physiological laws, although such as yet may not be properly understood.

The chemistry and physiology of milk are two important topics, and it is very desirable that a knowledge of both were much more extensively and generally cultivated. The motto of the Royal Agricultural Society, "*Practice with Science*," is a golden one; but when we begin to apply the will to the investigation of either the chemistry or physiology of this important secretion, the natural food of all young animals, we at once find ourselves in the dark, emerging, as it were, from under the canopy of night into a region where the rays of science are only beginning to shed their enlightening influence upon the face of things. No doubt, of late years, chemistry has done much in the analytical investigation of the subject, while physiology has been making equally laudable progress; but, as the old proverb, "a little knowledge is dangerous," here applies, this only renders our position at the present time all the more unsafe, and every step we take in advance in a higher degree dangerous.

An instance of this has just occurred at present, a continental chemist having made the discovery, in his laboratory, that the milk of the evening milking is richer than that of the morning. One of our medical journals lays claim to the priority of the discovery, such having been made by its analytical commissioner some ten or twelve years. Now, as regards the facts here discovered, most intelligent farmers have long been familiar with them, so that neither of our would-be chemical teachers have any right to lay claim to the discovery. We ourselves, for example, were thus taught when serving an apprenticeship some thirty years ago—not as a secret, but a fact generally well known; although the contrary doctrine is often advocated by those who dispose of the morning milk, and reserve the evening for throwing up cream; and which, we aver, is highly credited by an unthinking public, who thus allow themselves to be imposed upon.

It is this exception and diversity in the degree of richness which renders the course of teaching pursued by the above chemists dangerous, and therefore highly objectionable, when received as a general rule of guidance. In short, granting that the milk of every individual cow in a large herd were analyzed with the utmost accuracy, as to the percentage of butter and cheese, the experiment would only be applicable to that herd, and not to another. And even in this limited light the analytical investigation falls far short of complying with the demands of the golden motto, "*Practice with Science*," already quoted. In other words, the practice performed by the chemist in his laboratory differs widely from the practice performed by the cow in the manufacture of milk; but the doctrine taught by the former is evidently the science of the latter practice, so that our objection, when reduced to its simplest form, is the appending to the tail of one practice, if we may so speak, the science of another.

fowls, however, require more care, and killed with a sharp, pointed knife, or the fine blade of a pair of scissors, which is thrust through the palate to the brain; then the large vessels inside the throat are cut without injury to the skin; the animal is then suspended by the feet, in order that all the blood may run away, and its back is then washed.

"As soon as it is dead all the intestines should be drawn without making any opening, but drawn carefully out and cut off at their origin close to the gizzard. The liver and gizzard should remain in the abdomen. This operation is indispensable; for, if the intestines remained some time in the bird after death, the smell and even the taste of stercoral substances would invade the meat, would render it detestable, and facilitate its decomposition. The vacuum caused by withdrawing the intestines is filled up with balls of paper, which are put in at the natural opening, through which the intestines have been withdrawn; this keeps up the size and shape of the fowl.

"Fowls should be picked while they are hot. In this operation the greatest care should be taken to avoid tearing the skin, which spoils the appearance and injures the sale; after being picked, the fowl is put in cold water if the weather is hot, in order to become thoroughly cold; if that be not necessary, it is washed, wiped, and wrapped in cloth. The poultry women of La Bresse sew up their choice fowls in a fine cloth, taking care to maintain the oval

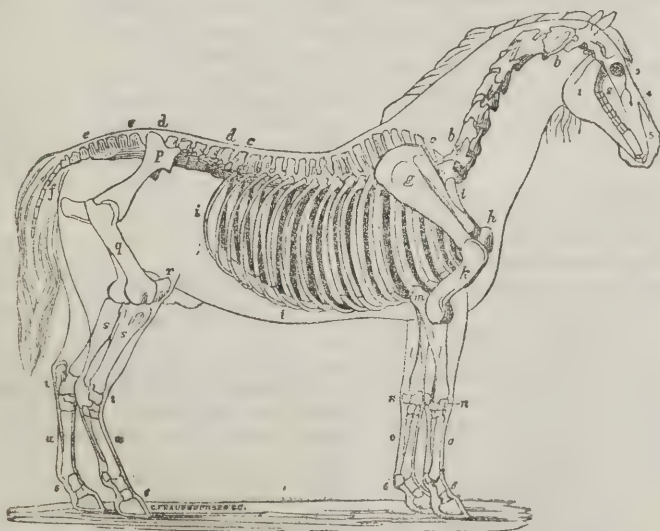
form; they then soak the linen in milk, in order to give more whiteness and softness to the skin.

"These choice products should not be packed up till they are thoroughly cold; each fowl should be wrapped in whity-brown paper, and they are generally packed in hamper."

We will now see what M. Mariot-Didieux says:

"BLEEDING TO DEATH.—"Much of the poultry brought into divers markets is killed a long way off. That killed by bleeding is cleaner, more saleable, and keeps longer than any other. The operation is generally performed with scissors which has two pointed blades, each *very* sharp. It is at the back of the mouth, behind the palate that the operator will sever the two carotid arteries. When all the blood has run away, the clots which may remain on the beak and at the back of the mouth should be removed and the parts where they have been washed with vinegar. This arterial bleeding empties the body of blood without any outward trace. Nearly all the fowls in the Paris market are killed in a different manner. Their throats are cut at the base of the head. The red wound, bloody and ill-looking, is not only a disagreeable object, but brought in contact with the air, putrefaction ensues; then it acquires a nasty smell, and often a buyer declines it for that reason alone. Killed as we advise, the animal is cleaner, more saleable, and it keeps longer. This is very important if it has to be sent far."—M. JACQUES' *Work on Poultry*

Veterinary Department.



THE HORSE.

Continued from January No.

The bones of the fore extremities are (G)

the Scapula, or blade bone, which is situated on the anterior lateral part of the thorax or chest. It is triangular in shape with base upwards, continuous with the cartilage of pro-

longation. This bone has two surfaces and three borders; the external or dorsum surface is divided into two unequal portions by a ridge, called the spine of Scapula; the anterior division is the smallest, and is called the "*Fossa antea spinatus*,"—the other receives the name of the "*Fossa Postea spinatus*." These cavities are filled by two large muscles, viz.: the *Antea Spinatus* and *Postea Spinatus*. These muscles are very liable to injury, especially in young horses when first put to work, and as a consequence the muscular fibre is wasted in some cases to a great extent, giving rise to a distinct hollow extending to the lower part of the scapula—the name applied to such an occurrence in this country is *Sweeney*.

The internal surface is slightly concave, and is roughened for the attachment of muscles, &c. The anterior border inferiorly terminates in a rough and somewhat hook-shaped process called the *coracoid* process.

The Apex of the Scapula presents upon the articular surface an oval shaped depression called the Gleanoid cavity, into which fits the head of the Humerus or bone of the shoulder. K, the Humerus or long bone, is situated betwixt the Scapula and the bones of the arm, placed in an oblique direction from above downwards and backwards. Long bones are divided anatomically into a body or shaft and two extremities, the shaft is cylindrical and has the appearance of being twisted upon itself. On the superior part of the shaft, is a large prominence called the external tuberosity, to which is attached several muscles; the internal surface is round, having near its middle a roughened eminence called the internal tuberosity. The superior or upper extremity of this bone is divided into two portions. One a large hemispherical portion called the head, which with the depression at the apex of the scapula forms the shoulder joint.

The second part of the superior extremity is formed by two eminences called the external and internal trochanter between which are two cavities receiving the name of Bicipital grooves. Through these grooves passes a strong muscle called the Flexor Brecchi muscle, and it is injury to this muscle at that part situated within the groove, which generally gives rise to lameness in the shoulder. The external trochanter presents two prominences, the summit and convexity. The convexity is situated posteriorly, and serves to prevent dislocation of the joint. The inferior or lower extremity is divided into two by a channel or groove. The two divisions are called the external and internal condyles. Between the condyles posteriorly is a deep oval-pit or fossa called the condyloid fossa, into which is received the beak of the Olecranon or point of the elbow; the inferi-

or extremity of the humerus, with head of the radius and ulna forms the elbow joint.

The bones of the arm are two, and are named respectively (L) the radius, and (M) ulna. These bones correspond to the bones of the human arm betwixt the elbow and the wrist. The radius is situated in a vertical direction between the humerus and upper row of bones of the knee, the posterior surface of the body of the radius is concave and roughened, and to the upper part of this portion is attached the ulna (E) which is more distinctly represented in cut 2. The superior or upper part of the radius is divided into two by a prominence, the divisions are called Gleanoid cavities, and on them rest the condyles of the humerus.

E, the *Ulna*, or cubital, consists of a body and projecting part and articular surface. The body is triangular, the base being placed against the posterior part of the radius, extending about two thirds down, and is firmly attached by fibro cartilage in the young animal, which in the adult becomes ossified. The projecting portions terminate in an apex, called the beak of the Olecranon, or the point of the elbow. In the Ox the ulna is much longer, and extends down the whole length of radius.

(C) the carpus or knee, corresponds to the human wrist, and is composed of eight small bones arranged in two rows, four in the upper, the same in the lower. This joint in the horse

is formed not only to allow of great freedom of action, but also to prevent concussion in galloping, as the union of the various bones overlap each other, and the whole are embedded in cartilage. The upper row performs the greatest amount of motion, and the bones forming it are named respectively [commencing at the inside] the *Scaphoid*, *Lunar*, *Cuneiform*, and *Trapezium*. The scaphoid is the largest bone of the upper row.

The bones of the lower row are the *Trapezoid*, situated to the inner side, the *Os Magnum*, the largest bone of the knee, the *Unciform*, and *Pisiform*, which is an exceedingly small bone, and often overlooked in dissection. The whole of these bones are firmly held in their places by ligaments.

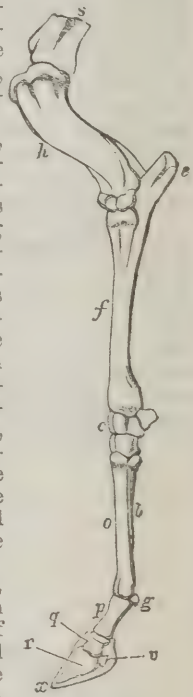


Figure 2.

The bones immediately below the knee are the large and small metacarpal or shank bones. (O), the large metacarpal bone, belonging to the class of long bones, is slightly flattened from side to side, its shaft is about the strongest in the body, from its containing more compact tissue. The posterior surface is broad and flat, has along its upper two-thirds a roughened portion for the attachment of the small metacarpal, or as they are sometimes called the splint bones. On the superior extremity of the metacarpal bones rest the lower bones of the knee. The lower extremity presents a prominence and two hollows, and rests on the head of the large pastern bone, forming the fetlock joint.

The two small metacarpal or splint bones are in the young animal attached to the large bone by fibro cartilage, the union in the adult becoming ossified. They usually extend about two-thirds down the large bone. The splint bones receive the name of external and internal, the former is the larger of the two. It is betwixt the internal small and large metacarpal bone—When there is a deposit of bony matter, giving rise to an enlargement, such an enlargement is called *Splint*.

Besides the two small splint bones are situated behind the fetlock, two bones called the (G) Sessamoid bones, these bones act somewhat in the manner of pulleys.

(P,) the Oss. Suffraginis or large pastern bone, is situated in an oblique direction between the metacarpal and small pastern bone. Its posterior surface is flattened, presenting two elevated ridges forming a triangle. To this eminence is attached the Sessamoidean ligaments. The inferior extremity rests on the small pastern bone, the union of the two forming the pastern joint.

(Q) the Oss. Corion, or small pastern bone, is partly within and partly without the hoof. This is an exceedingly strong bone, being broader than long. Its superior surface is divided by a transverse eminence into two concavities, the lower extremity articulates with the coffin and navicular bone, forming the coffin joint.

To be continued.

NOTICES TO CORRESPONDENTS.

SPAVIN.

I have a well-bred horse five years old, lame for about six months from a spavin on the off hind leg. Not knowing anything about it myself, I had him treated by a person here who pretends to cure everything, but whose cure (in my case at least) was worse than the disease, for instead of curing it the strong blister used destroyed all the skin on the joint, which is now an ugly raw sore. I fear it will always be a blemish. He is far lammer now than before it was applied. It was put on several times within the last four months.

I don't know what he used, but it was a colored liquid which smoked when put on, and caused dreadful pain, the poor horse kicked about holding up the leg. In fact he has lost flesh ever since. Anything you recommend will be most thankfully received

Your's truly,
A SUBSCRIBER.

The treatment of spavin by such severe measures is but too common in this country.—It is lamentable to see so many fine animals tortured and blemished by useless and violent blisters.

From your remarks we think that your case must have been treated by Butter of Antimony, or Muriatic Acid (Spirit of Salt) which powerful caustics are favorite remedies of Quacks in such cases, and often destroy skin, ligaments, blood-vessels, &c., and either render the animal useless or blemish him for life.

We would advise you to lay him up for a month or two, and dress the raw surface with a little simple ointment or oil till it heals up,—when if the lameness still continues, a mild blister may be useful, but the most effectual is a seton passed over the spavin. This, however, can only be done by a person well acquainted with the anatomy of the part, as there is considerable danger of wounding the synovial cavities.

Feed him well, and give him occasionally laxative medicine and bran mash.

Editorial Notices, &c.

THE AMERICAN SHORT HORN HERD BOOK: Mr. Lewis F. Allen, of Black Rock, N. Y., well known as the publisher of this indispensable book of reference, and as a prominent agriculturist in other respects, has decided to publish a sixth volume early this summer, provided a sufficient number of pedigrees are offered, and a corresponding number of copies subscribed for, to warrant the undertaking. We have received a copy of his prospectus addressed to breeders, dated December last, of which we copy so much as contains the instructions to persons sending pedigrees, and the terms:

"If you wish the pedigrees of your Short Horn Cattle recorded, you will please forward them to my address as soon as you can prepare them—at all events by the first of March next.

The form of making out the pedigrees for publication is so generally understood by reference to the previous volumes of the Herd Book, that no farther instructions are now needed—so that they be plainly written in the usual form, on one side of the paper only, and the necessary references distinctly made out for publication.

For every pedigree recorded, the charge will be remitted with the pedigree.

The pedigree of every bull occurring by name in the lineage of the animals sent for record, if not recorded in either the American or English Herd books, must be sent for record, and for which the same charge of fifty cents will be made. Such bull will be recorded by number in this volume, so that the lineage of every recorded animal can be complete without further question.

State name, color, age, and sex of the animal; also the name of the breeder and owner, and his Post Office address.

State, with the list of the pedigree you send, the number of copies of the 6th volume you wish to subscribe for, the price of which will be as for the past volume—\$5 each per copy.

I will *print* and *insert* well executed cuts of animals, (the cuts being furnished and sent to me without expense on my part, as usual) at \$5 each for the whole number of copies printed of the book.

I will *bind* in the book furnished to me, as above, good lithograph portraits of animals, at \$2 each.

I shall endeavor to have the book ready for delivery in the month of May next.

The Short-horns are the noblest, most valuable race of horned Cattle in existence, and will ere long be restored to the proud position in our agricultural productions which they maintained during our most prosperous times. As such, every Short-horn breeder owes in to his own interest to keep the blood and lineage of his herd on an indisputable record."

AMERICAN REPRINT OF BRITISH PERIODICALS.

—We beg to call the attention of our readers to a notice of the American reprint of the British Reviews and Blackwood's Magazine, in our advertising columns. We have so often spoken of the great merits of these Periodicals, and their adaptation to the wants of the thinking and business community, as well as to the mere scholar and man of science, that it is unnecessary to add any thing more. In all British Provinces, these inestimable publications ought to be universally disseminated. We are glad to see that notwithstanding their late disastrous fire the enterprising Publishers, LEONARD SCOTT & Co.,—have been prompt in bringing out the current numbers only two or three weeks after the publication of the original edition in Britain. The price will continue as heretofore up, to the first of April, notwithstanding the late enormous advance in paper and other materials. The amount is *not one third that of the English Edition!* We

would therefore advise new subscribers to commence *at once*.

THE SCIENTIFIC AMERICAN.—Our readers will find a detailed Prospectus of this old and valuable Scientific Weekly in our advertising page. It is the only similar publication possessing high merit issued on this continent, and we should like to see it generally in the hands of our farmers as well as mechanics. They would find much in its columns relative to agricultural implements and machines and subjects belonging to rural life, while to the intelligent and improving artisan and manufacturer it seems an indispensable companion.

To CORRESPONDENTS.—Several communications which have come to hand too late for the present number shall appear in our next.

TORONTO MARKET PRICES.

TORONTO, FEBRUARY 28, 1863.

Fall Wheat, per bushel.....	\$0 90	to \$0 95
Spring Wheat, ".....	77 "	82
Barley, ".....	90 "	95
Peas, ".....	52 "	56
Oats, ".....	40 "	42
Rye, ".....	56 "	
Pork, per 100 lbs.,.....	3 00 "	4 25
Beef, ".....	4 00 "	5 00
Mutton, ".....	4 00 "	4 25
Potatos, per bushel,.....	55 "	60
Apples, per barrel,.....	75 "	1 25
Turnips, per bushel,.....	18 "	20
Onions, ".....	1 25 "	1 50
Fresh Butter, per lb.,.....	15 "	20
Tub Butter, ".....	12 1/2 "	15
Eggs, per doz., packed 15c, fresh,.....	20c.	
Turkeys, each.....	55 "	80
Geese, each,.....	40 "	50
Ducks, per pair.....	40 "	50
Chickens, ".....	25 "	40
Hay, per ton,.....	10 00 "	20 00
Straw, ".....	8 00 "	12 00
Hides, per 100 lbs.,.....	4 50 "	5 25
Calf-skins, per lb.,.....	9 "	
Sheep-skins, each.....	1 40 "	1 75
Wool, per lb.,.....	30 "	32
Clover Seed, per bushel.....	3 75 "	4 00
Timothy Seed ".....	2 00 "	2 50
Plaster of Paris, per barrel ..	95 "	1 00

THOROUGH-BRED STOCK FOR SALE.

THE SUBSCRIBER OFFERS FOR SALE three Durham and two Galloway Bulls, one year old; and a few females of the above breeds. —Terms easy!

JOHN SNELL.

Edmonton, Feb. 13th, 1863.

3-tf.

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Notwithstanding the cost of Reprinting these Periodicals has more than doubled in consequence of the enormous rise in the price of Paper and of a general advance in all other expenses—and notwithstanding all other publishers are reducing the size or increasing the price of their publications, we shall continue for the year 1863, to furnish ours complete, as heretofore, at the old rates, viz. :—

1. *The London Quarterly* (Conservative.)
2. *The Edinburgh Review* (Whig.)
3. *The North British Review* (Free Church.)
4. *The Westminster Review* (Liberal.)
5. *Blackwood's Edinburgh Magazine* (Tory.)

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For Blackwood and one Review -	5 00
For Blackwood and two Reviews -	7 00
For Blackwood and three Reviews -	9 00
For Blackwood and the four Reviews -	10 00

These will be our prices to all who pay prior to the 1st of April. To those who defer paying till after that time, the prices will be increased to such extent as the increased cost of Reprint may demand—therefore,

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PROSPECTUS

OF THE

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THE
Canadian Agriculturist
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JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV.

TORONTO, APRIL, 1863.

No. 4.

HINTS FOR THE SEASON.

The advent of Spring is welcomed by all classes of people, and brings with it to the farmer an incessant round of activity and care. The vigours of winter have now passed away, and the daily increasing solar action is awakening up the vegetable kingdom from its long winter sleep, and even animals experience the influence of renewed vital power. Let not the farmer, however, suppose that in regard to his domestic animals the spring time brings no anxiety or care; for it often happens in this climate that early spring is the most trying and critical period of the whole year. The stock of proven deer too frequently becomes all but exhausted, and great difficulty is consequently experienced in sustaining cattle in a thriving condition before the pastures are ready to receive them.—Horses require more generous feeding as their work increases; and greater attention should be paid to grooming, cleanliness, and regular supplies of food, consisting, as much as possible, of a mixed character. A few carrots, turnips or mangels given daily to a horse, at this season especially, will be found to have a very beneficial influence on his general condition, and greatly aid his power of enduring the extra toil to which he is now subjected. A little extra attention to these matters will very much tend to facilitate farm operations at this busy period, and will likewise preserve the health and increase the strength of this noble and useful animal. Roots will also be found equally beneficial to other classes of his stock. They not only

impart a large amount of nutritious ingredients to the animal, by which ordinary waste is restored, and growth promoted; but they operate beneficially in producing a healthy action of the stomach, and in purifying the blood. Cows, either before or after calving, when kept in the byre, are greatly benefitted by a small daily supply of roots, and the remark will also apply to young stock that are too commonly destined to live, or rather sometimes starve, on inferior hay or straw, only suited for litter. Sheep will now require much attention, especially ewes that have lambed or are about to do so. Protection from wet or cold, particularly during the night, is still requisite; but great care should be shown to sheep in allowing sufficient room for exercise and plenty of fresh air. In the coldest weather sheep will suffer, and the foundation of fatal disease be laid, by keeping them in too close a situation. Happy that farmer who has a supply of well kept roots at this season of the year. A little linseed or oil cake also will be found of inestimable advantage; and it would be well for every farmer to grow a small plot of flax, if only for the seed to help his stock fairly through the winter. By making timely preparation in reference to these matters, the ordinary hay and straw will be greatly assisted and improved for feeding purposes.

The prudent farmer will be in readiness to put the plough into operation as soon as the frost is out, and the ground sufficiently dry. Not a day should be lost in our short seasons in preparing the seed bed, that sowing may commence at

the earliest practicable period. Early sown grain will be found to produce the heaviest sample and consequently the best quality. No precise time however can be absolutely laid down for the performance of these important operations. Much must depend on the character of the season, and the nature and condition of the soil.— Though early sowing as a general rule is to be recommended, we must wait till the soil is sufficiently warm and dry, or the seed will not germinate, and much of it may perish. It is a sound practical rule, also, not to plough or otherwise work land when in a wet state; far better wait for a more favourable opportunity. By working land while in a wet state, its condition is more or less injured, and rendered unfavourable to the growth of the crop during the whole season. It will be seen that the precise time for ploughing and sowing must not depend on the day of the month, but upon conditions that are more or less variable; and consequently what is considered late in one season, might be regarded as particularly early in another of a different character.

From what has already been said it will be seen that the raising of root crops forms an important feature in every good system of modern husbandry. To the stock farmer roots and green crops constitute his sheet anchor. Now then is the time to commence preparing land for turnips, mangels, carrots, &c. Under this head also may be included flax, the culture of which is gradually making progress in many parts of Canada, and which promises, if persevered in with judgment, to add materially to our provincial resources. For these crops we strongly urge our farmers to make good and timely preparation. If the land has been deeply ploughed in the fall, incorporating farm-yard manure, all the better; but this circumstance will not make spring cultivation less necessary. It would be well to look to the thoroughness of preparing land for these kind of crops, than to the mere extent of culture. One well prepared acre will often produce as much as two inadequately treated. Liberal treatment of land for all kinds of crops, is no doubt the best paying in the long run, and in case of roots this holds specially true. We may just remind the farmer that great relief may in some places be given to winter wheat by inspecting the fields at this season, and opening any obstructed water furrows, there-

by preventing injurious stagnation. In short, it should be the constant effort of the farmer, particularly in spring and fall, so to arrange the surface furrows, as to allow water freely to pass off into the adjoining natural outlets. Even in well underdrained land this precaution cannot be dispensed with.

THE PROGRESS OF AGRICULTURE IN CANADA.

MESSRS. EDITORS OF AGRICULTURIST:—I am induced, after much consideration, to take up my pen, from the perusal of an article that appeared some days ago in the *Leader* newspaper, questioning in some measure, the propriety of the University Commissioners to abolish the chair of Agriculture in the Toronto University, and commenting in general terms upon the present progress of agriculture in western Canada.

I have been expecting every day since, to see in that paper, by a practical agriculturist, more able than myself, a refutation of several assertions and impressions set forth in that article which are practically untenable, made, doubtless under erroneous information by an able writer, but who, nevertheless, is somewhat out of his depth on the all important subject of agriculture, or in other words, all abroad as to the present status of agriculture in this Province, I allude especially to Upper Canada.

The article, upon the whole, is undoubtedly a very able one, and although I can accord much that the writer says regarding the indifferent cultivation of a part of the soil, at the present time, in some sections of the province, and lament as much as any one the paucity of science employed as a necessary adjunct to the successful carrying out of all agricultural operations, I cannot concede, even to the doubt of whether we are progressing or retrograding in that truly important industry, or as to the propriety of abolishing the chair of Agriculture.

Notwithstanding, I am willing to admit that the older cultivated farms generally speaking, are not in every case being supplied, or renovated sufficiently with proper and needful fertilizers, so indispensably necessary in producing a full and remunerative crop, where the land is under yearly cultivation; yet, upon the whole, making due allowances for the last two unfavourable seasons, more especially in the north and north-west part of the province, I do not think it can be said *with any show of justice*, that as an agricultural community we are not progressing. I think far otherwise! and I imagine that I am borne out in this conclusion by what I have witnessed, not only at our late Provincial Ex-

hibitions, but by the very extraordinary specimens of grain, roots, and fruits produced at our County and Township Shows, held in almost every part of the upper Province. Does not also the fact of the success of Exhibitors from Canada at the "World's Fair" both years in London, prove incontestably that we are progressing in our agricultural industry. We have taken there first-class prizes and medals for wheat, barley, oats and peas, and I believe for grass seeds as well, as also for cured meats, cheese and implements; and indeed many articles connected with agriculture. Does this say that we are either retrograding or standing still? Then with regard to the general stock of the country, can it well be faster improving than it is? thanks to our spirited importers for this, of which I am thankful to say we have many. We need only ask our (just now) unfortunate neighbors on the other side the lines, what they think of our progress; or hear the remarks of old and experienced landlords and tenants, farmers from Great Britain, regarding every class of animals they witnessed both at our Exhibitions, and at the shambles, during their transitory sojourn amongst us, to feel satisfied that we are steadily and substantially progressing in this particular.

Again, respecting the progress of our agricultural machinery, carriages and implements, no one can but allow that we are making great headway. It needs but, in case of any one doubting, to have witnessed the display in these departments at our last two or three Provincial Shows, to be thoroughly convinced of the fact! There are I hear, two or three establishments in the province, at the present time, that cannot possibly meet the demand for improved machinery, ploughs, and other agricultural implements. Does this imply that we are unprogressive?

Would these implements, let me ask, be wanted, or would the demand for improved breeds of stock, throughout the province, be made if we were not steadily and surely progressing in our agriculture? Why then, if the spirit of agriculture is thus alive, should there not still be every facility and encouragement continued by the Government of the country to so important a branch of our industry? Will the fact of depriving us of our agricultural chair in the Toronto University, or lessening the annual grants to our Societies, in any way affect aught to our advantage, or tend to improve our position, or encourage our future hopes? I trow not! Nor does it follow that, because there are to be found *drones* in the industrial hive, that the *workers* are to suffer from their supineness and indifference.

I grieve as much as the writer of the article before alluded to can, that there should be the manifest lack of interest shewn that there is by *part* of the farming community in endeavouring to raise the profession to which

they belong, to a higher or more satisfactory standard.

But, Sir, this in my humble opinion, will be effected only by time. It cannot be effectually accomplished by the present generation, though yearly progress may and doubtless will be made.

The absence of sufficient education amongst the agricultural youth of our country, together with the lack of capital, will for years prove a bar to that progress we could all wish to see made. We need, however, only look back a comparatively few years, and call to mind the very crude state agriculture was in throughout the British Isles, to take courage and assure ourselves that we shall effect more towards the development of the soil in the next ten years, than was accomplished there some years back in thirty! Truly, however, may it be said, they have, of *late years*, made marvelous strides, with the aid of science and *well applied* capital, from which we also must in some measure, reap great benefits.

Why, Sir, it was but a very few years before I left the old country, some twenty years ago, that there were a very few Agricultural Societies existing in England. But the landed proprietors, both great and small, began to find that, not only were their barns and buildings going to waste and ruin, but that their rent-rolls were assuming a deficiency that became truly alarming, and then, and not till then, was it that the great impetus was given to improve the agriculture of the country by the landowners, taking the bull by the horns in the determination to resuscitate the value of their estates, not only by draining, and sundry other improvements, but by the establishment of Agricultural Societies, thereby creating great emulation amongst the tillers of the soil, and by setting an example themselves, with a desire not only to better their own position, but with a laudable earnestness and zeal to add comfort and prosperity to their tenantry, by a system of improved agriculture.

It needs no argument of mine to point out the many phases under which all, and even more than all, has been accomplished in this respect, that they, the aristocracy of Great Britain, could at that time, in their most sanguine moments, have anticipated. I allude, Mr. Editor, to this fact, to show how much has been accomplished in so few years, and to hope that any one doubting what I have predicted regarding the steady progress we in this country are bound to make in agriculture, will take heart of grace, and put his shoulder to the wheel with a firm determination to master, in some measure, at least, the arts and mysteries of his profession; and thereby greatly add not only to his comfort and prosperity, but also to the material wealth and credit of the province.

This fact should never be lost sight of by the cultivator of the soil, that *capital well*

and judiciously applied upon the farm, if not in the first year, is certain, nevertheless, in the next and following years, to insure an ample return. But do what we will in the use of all the skill, capital and industry we possess, "there are times," as my lamented father used to say in my youth, "when the seasons will make fools of us all; this, however, must not deter us in our best endeavours to overcome difficulties, for there is nothing in this world more truly grateful than the soil, for generous and kind treatment!" This admonition I have never lost sight of to this day, and, in some measure, I hope I have profited by it..

I find, Mr. Editor, that I have somewhat wandered, in part, from the point I had in view, when I recommended this letter—a refutation of two or three statements in the article that has called it forth.

The writer in that article asks "what new productions are being acclimatized and developed; and what old ones are, in any given district, being increased without bringing additional soil under cultivation."

In answer to which, I reply, that within the last two years, in one locality alone that I am acquainted with, upwards of 1500 acres of Flax have been grown, and in other parts of the Province it has also been extensively cultivated, and I doubt not, from information I have received, that the coming summer will produce some hundreds of acres of increase from the last. And all this would have been accomplished much sooner, had the grower known how to treat the crop, and where to find a market when grown. This trouble, however, thanks to your Journal, and to those gentlemen who have taken a great interest in the matter by their individual exertions, is greatly, if not entirely removed. We have much also to thank the Government for, in importing of machinery, and granting the aid it has done in this matter, through Mr. Donaldson, by whose efficiency and persevering exertions, much encouragement has been given to flax growing. The desirability of which, the farmers of this province will, doubtless, soon properly appreciate, especially so, when they have become more familiarized with its proper cultivation, and treatment.

Herewith you will find enclosed an article cut from the *Guelph Mercury*, wherein is stated that, the produce of dressed flax, seed, and tow, of six acres, sold by Mr. Hennyberry of Elora, to Mr. John McCrea of Guelph, realized the pretty little sum of \$462.50!

Surely if there should be any farmer at all sceptical as to flax growing *paying well*, the above account will, at once, dissipate any doubt from his mind on the subject. We must too, in this matter, not lose sight of the advantage a change of crop always proves to the soil, more especially where it has been too long under one form of tillage.

Then again, there is winter Barley being introduced in different parts of the Province, to which we were perfect strangers only two or three years back. Some farmers, I know, have been very successful with it, though others may not have been, through sowing too late, and from lack of knowledge of the treatment which the plant requires.

Then there is the Alsike clover, being new to the soil, has been very successfully grown in many districts, producing abundant crops where the soil and treatment has suited it. The Millet also has lately been introduced with equal success, and the sorghum, or Chinese Sugar cane is now undergoing a trial in several parts of the province—to say nothing of the many new varieties of Potatoes, which have, of late years, been raised from seedlings, chiefly produced in this country, with great success. And as regards our root crops, the foundation, I maintain, of all good farming, it may be truly said, they are increasing in an extraordinary degree, far indeed beyond the expectation of the most sanguine and energetic amongst us. And root culture, I am glad it is in my power to say, is not confined to one locality only, but, it may be said, is becoming general throughout the province, as our Provincial Shows, *wherever held*, amply testify. And I think I can speak with truth to the fact that, where there was one acre of roots (turnips more particularly) grown, in this neighbourhood when I first arrived here some seventeen years ago, there are twenty now. And I may hope, without taking undue credit to myself, that I was somewhat instrumental in giving an impetus to this branch of agriculture, not only by the example I set for several years in the large yield of turnips that I grew to the acre, but also in setting forth the unmistakable advantage accruing from the root crop, in a lecture at one of our Farmer's Club meetings held in Guelph some years ago. Whether, however, I am right or wrong in this supposition the fact is patent, that in less than five years after that lecture, there were in the neighbourhood ten acres of turnips grown, to one previously. And I think, from a correct recollection of the many inquiries of me, by different individuals almost immediately after, respecting the *modus operandi* in the growth of the crop.—I do not err much in the conclusion I have arrived at.

I have here again introduced this matter, more especially to refute the assertion, in the article before alluded to,—“that a prize is given for a sample of wheat, which does not necessarily depend upon good farming at all; it may be, and in this country often is, the result of some lucky accident.”

Now, Sir, from the above extract, the writer evidently intends to imply that the 30 or 40 splendid samples of winter wheat of 25

bushels each, exhibited for the Canada Company's prize of £25, (say nothing of all other samples in other classes) were produced by mere accident, or without the skill and energy which must have been applied to produce, not only such *quality* of grain, but such *quantities* of it, exclusive of the many thousands of bushels, equally good, that were kept at home!

Can therefore, anything, I would ask, be more fallacious, or unjust towards us as an agricultural community? Never shall I forget the admiration and surprise expressed on more than one occasion, by the more prominent and practical agriculturists across the lines, at the numerous, and to them, extraordinarily beautiful samples of wheat, as well as of other grain at those times exhibited, when they honored us with their company, and the conclusion, (natural enough) drawn and expressed by them, was, "that there had been some extremely good culture, as well as good soil, where such prolific and splendid samples of grain could be produced!"

I cannot but think this conclusion a much more natural, as well as a more just one, than the one arrived at by the writer before alluded to.

Why, Sir, I dare answer for it, that there was not one exhibitor of those samples of wheat, but had carefully and skilfully prepared his soil by fallow for the growth of that crop, or it had been taken after a thorough preparation for a green crop the year before. Does this, and the fact also, that there are thousands of acres yearly in this country, highly and well prepared for roots, and afterwards put to spring wheat and barley, sown with clover and timothy, and in a favourable season producing abundantly, prove that our crops are produced *by accident*, or at most that the production is a *casualty*?

Nevertheless, I do not mean to say that a season will not occur that a tolerably fair crop of grain, of any kind, may not be grown with but little or no skill in its culture.

But, let me add, such occurrences are rather the exception than the rule, and are something like the angels' visits, few and far between! I think twice only have I had the pleasure, to my surprise, of witnessing such a novelty in the course of seventeen years. How much too, is the opinion of the writer I have alluded to at variance, regarding our agriculture, with a recently expressed opinion of the Hon. Geo. Brown, who, a few evenings ago, was speaking at a church meeting in Guelph, when in allusion to the great pleasure his recent tour had given him in the rural districts of his native country, and in England, said, "that he did not think that agriculture had made much more progress in England than in Canada; there were some highly cultivated lands, and much but middling, and that England was by no means the garden that some supposed

it to be. He saw many enclosures and farms that would have suffered greatly in comparison with the fields and homesteads in a number of places in Scotland and in Upper Canada." Again, in speaking of the display at the great exhibition of Canada's products, he adds, "There was an immense display of machinery, but in agricultural implements, *Canada* was held to *excel* the mother country!" and thus corroborating to a great extent what I have advanced. Will Sir, any one believe after such a declaration from an eye witness, (so recently returned from the old country) of the results of the great efforts which we all know have been made there of late years to improve agriculture, that *we can possibly be the drones* that deserve to be deprived of our agricultural chair, or be denied that succour from the Government grants that have of late years been so liberally allowed. Nor can I be induced to believe that because there are not *at the present time*, the number of pupils attending the worthy Professor's lectures on agriculture, which we would all wish to see, that that chair should cease to exist!

In a few years, it is possible that the reverse may be the case: at any rate, the subject is fraught with such vast importance to the present and future interests of the agriculturists of this country, that it ought to be approached with the greatest caution and consideration so grave a subject demands. And most sincerely do I agree with the writer of the article I have so often alluded to, when he says, "before we abolish the chair of agriculture, *let us be sure that we get something more effective in exchange!*" In that same article, the writer in endeavouring to show the inutility of fattening animals to the extent that is sometimes practiced, quotes, *as he imagines*, very high authority on that subject, to support him in said opinion, which is no less a personage than the lamented and talented Lord Macaulay, who says: "a prize poem is like a prize sheep. The object of the competition of the agricultural premium is to produce an animal fit, not to be eaten, but to be weighed. Accordingly he pampers his victim into morbid and unnatural fatness; and when it is in such a state that it would be sent away in disgust from the table, he offers it to the judges. In general, prize sheep are good for nothing but to make tallow candles; and prize poems are good for nothing but to light them."

The late respected Lord Macaulay, was undoubtedly, a highly talented and clever man. No one will dispute that, but in this respect, his ideas of the value of a fat sheep cannot be our guide star, and he evidently was much more at home in Literature and History, than in agriculture. We all well know, who know anything about the matter, that a sheep or any other animal, is not made unseemly fat especially for the table, but for the purpose of

showing what high blood, and skilful and liberal feeding combined, will accomplish; and to such an extent has this sometimes been carried, that many a breeder has been induced (injudiciously as I think) to sacrifice his best breeding animals in the accomplishment of it; but which enabled him to show to the world the extraordinary disposition of his herd, or his flock, to make weight in a short space of time, with high feeding, or with only ordinary food, and thereby to induce purchasers of his stock.

This has been the chief object of owners of improved breeds, in fattening their animals to such prodigious weights. Besides, there was a time, more particularly so than now, when the fat from these animals was more valuable than the lean, and, in fact, it is so in part, even at the present time. Coal oil was not then heard of, and other oils were beyond the reach of the million, and before we were in the enjoyment of gas, the tallow from fat sheep and cattle was as necessary to our use in "lighting our darkness," as other substitutes are now.

And even at the present time, there are many uses found for the surplus fat of all animals in this country, as well as throughout the world.

I do not therefore see the utility of discouraging the feeding of some animals to extreme fatness, by withholding prizes from them, for most assuredly, *we have far more of the lean kind than of the fat*. Though extreme feeding, like many other extremes, is often carried too far! I do not however err when I say that thousands of others, as well as myself, prefer the lean of a well fattened animal to that of a poor, and half fattened one. Let not, therefore, I should say, the breeding and feeding of fat animals be discouraged by withholding premiums from them. Let the high-blood have a chance of showing itself, and my word for it, the saying of the "good old Duke," in choice of a charger will be verified "an ounce of blood any time, against a pound of bone!"

Besides, breeders can never know the real value, or constitution of their stock, unless they do *occasionally* try what they can produce by high feeding.

I shall only just briefly allude to one other subject immediately connected with the progress of our agriculture in this province, and then bring this, already too long a letter, to a conclusion, and which I think will go far to show how little ground there is for any one to infer that there is little or no good tillage of the soil, or that we are not progressing as we ought, considering we are but a new country. Not, but what there are doubtless many farms slovenly managed; no one can controvert that; but, let me ask, are there not num-

bers in England, Ireland and Scotland, as well as amongst our cousins across the lines? Undoubtedly there are, and there always will be.

The one subject more, that I am about to revert to, is, that of our ploughing matches in western Canada.

Does not the emulation of our farmers in this branch of our industry speak volumes? Where else will you find such work done, and such teams shown as at these exhibitions in so young a country? The work executed on these occasions, would do credit to any country, and it is an extremely gratifying reflection that the zeal and energy of the *youth* of the province, in this particular, yearly increases, as I have myself seen. Much of their work on many occasions, being little, if any inferior to the senior ploughmen. Such teams, such ploughing, and such bone and sinew of the country as have been shown at the Scarborough, Markham, Whitby, and other ploughing matches may fairly vie with any country in the world, to say nothing of what takes place in other counties. Why, it was but the other day, a few miles from Guelph, that a similar gratifying scene was witnessed, when upwards of *sixty ploughs* started for competition! and the amount of premiums awarded was, I think, little short of two hundred dollars! It is hardly necessary to say that by every ploughman the work was most creditably done.

I trust, Sir, that if this letter should meet the eye of the writer of the article to which this is somewhat of a reply, he will *feel* that he has unwittingly misrepresented facts, and has in a great measure, underrated the efficiency and persevering energy of the tillers of the soil in this favored country. Even bearing in mind that the high rate of wages here has operated, and will for years to come, operate disadvantageously in no small degree, to the desired advancement of agriculture.

I would gladly, and at length, allude to the great stride our twin sister, *Horticulture*, is making amongst us, but as my letter is already far too long, I must only say, that towards it, in some districts, the *Farmer* very materially adds his quota, and, every year, this much desired branch of our industry is greatly increasing amongst us. And to those professional and amateur gentlemen, who have been for some time past taking the lead in this important matter, our best thanks are due for the liberal and kind manner in which their experience and knowledge is conveyed to us, *without stint*, by you, through your valuable journal. This, too, will go some little way to show that we are not a stand still community.

One word to the would be destroyers of our cherished and valued University, and I have done. That their scheme will be frustrated by the honesty and good sense of Par-

liament, the Government, and the country, they may rest assured; and, believe me, such is the earnest wish of your obedient servant,

LEICESTERENSIS.

25th February, 1863.

HOW FARMERS CULTIVATE WEEDS.

[The following lecture, recently delivered by Professor Buckman on the growth of weeds by the farmer in the cultivation of his crops, before the Berkeley and Thornbury Association, England, will be found of no small use to our readers. Professor Buckman has paid special attention to this subject for a number of years; and many of his suggestions will be found equally applicable to this side of the Atlantic as they are to the other.—EDS.]

Farmers, often unwittingly, cultivate weeds in one rotation. I shall attempt to point out to you that farmers grow weeds under the following circumstances:—

1st.—In their general tillage operations.

2nd.—From mature heaps.

3rd.—They sow weeds with their crop seeds—that is a very fertile source of weed cultivation.

4th.—They allow weeds to seed in their fields.

As regards the cultivation of weeds in tillage operations I will just draw your attention to the natural history of the common thistle.

The plant crops underground, and in so doing produces long underground stems, which sometimes reach to a very great distance. The plough in going through the soil cuts these stems into pieces, and they are not generally picked up. Every one of these pieces contains one or more buds, each capable of producing a distinct plant. This is the creeping underground thistle. I have seen in one spot two or three of these centres from which radiate the underground stems, covering a space as large as half the circle of this room; and I have seen these continue to spread underground until the whole field has become covered with thistles, owing to the stems being cut up into little bits in the ordinary tillage operations; these little pieces not being picked up, the harrows go over them and regularly distribute them all over the field. And exactly the same thing occurs with regard to the colts-foot. I have frequently heard farmers say thistles do not grow from seeds at all, which is a fallacy. In proof of this I have performed some experiments. I obtained some thistle seed, and planted 10 of them in a place where I could watch them. They all came up; and it became a curious question how farmers ever arrive at the notion that thistles do not grow from seed. I conceive it is just this; that the thistle is at first a very little plant, which dies down entirely towards the autumn; but in the meantime it has sent out a couple of buds near

the roots, which stretch out, and put out fresh buds, so that in the next year a plant that was so small as scarcely to be seen, will spread and cover a circle of some 6 or 8 feet. The notion that thistles do not seed probably arose from the fact that the seed is frequently eaten by a little weevil, the down of the seed being alone left. This was a most fortunate thing for this country, otherwise if every seed were uninjured we should have what they have in Tasmania, namely, a plague of thistles. Our thistle has been transported to that country with our emigrants, as have been so many other weeds of the mother country to our colonies; but, fortunately, we have the weevil here, which destroys large numbers of the seeds, but which has not accompanied the plant to Tasmania, probably from the climate not being suitable, and consequently they have a plague of thistles. For their extermination laws have been instituted, which are rigidly enforced. In many parts of the island it is found impossible to grow crops on account of the extraordinary development of the thistle.

Let us look again at another case. There is the weed known as the coltsfoot, which we treat in the same way as the thistle.

It increases in the same way as the thistle by sending out lateral buds or shoots, which, on being separated from the parent stem, or broken up, will grow into a perfect plant. Thus we may see whole fields covered with coltsfoot, having spread from centres in this way. Let us look a little more closely at the natural history of the coltsfoot, and then we shall see how serious are the injuries caused by it. In the early part of the year it has little inconspicuous flowers, and no leaves, and the farmer therefore when he sees them amongst his corn thinks very little of them, and allows them to remain. By-and-by, when the usual period for wheat-hoeing arrives, the hoe is busily engaged in chopping them. The blossoms have by this time ripened their seeds, and the plant has the underground stems I have referred to in every direction. Every one of the blossoms whose seeds are scattered by the hoe plants 150 new plants, each seed having a parachute by which it flies about, and is planted somewhere or other. So that in the usual farming operations, without knowing it, the hoer takes care that every coltsfoot seed shall be very nicely and delicately planted. I am quite sure that the more you reflect on this matter, the plainer will you see the truth of what I am stating. But had these flowers been cut down before the seeds ripened, you would have prevented the possibility of the seeds it afterwards contained from being planted.

It is the same with regard to couch, which is perhaps "cultivated" to a greater extent on the Cotswolds than it is here. On one or more sides of many fields on the hills there is a wall, and under that wall there will be a piece of ground the plough cannot get at. These are the places where weeds grow, and flower better than anywhere else, and the seeds become scattered over

the land. The roots of the couch and other weeds run from these places into the cultivated ground, where they are cut up into little bits by the plough, and extensively propagated. Couch can be picked out of land when there is a single plant or so in it; but it is exceedingly difficult to pick up all these small pieces, and they remain to become centres from which fresh plants are sent out to choke the growing crops.

2. With regard to our second point—the propagation of weeds by manure heaps—it is a very important question how farmers grow weeds from the seeds being scattered in the manure heaps.

Some two or three years ago I was on a farm upon which the farmer had commenced the growth of flax. In that flax was a quantity of black mustard seed—not the common charlock (*sinapis arvensis*), but that charlock with the smaller seed and flower, and usually a smaller plant, *sinapis nigra*. This is much more general than the other. I saw that there could not be a ready market for this flax, from the prevalence of the black mustard. The seed was thrashed out, the charlock seed was separated, but it was not burnt or destroyed as it should have been, and some of the refuse seed got into the fold yard, and it was mixed up in the manure heap. It is commonly supposed that if weeds are put into a manure heap, they will rot and decay; and so most plants will, but there is a vital principle in the seed that will resist decay (for it is the principle which is to bring about the new plant) longer than any other portion of the plant. The result was that in this case, where the manure containing the seed was carried and spread over the land, the next year it was quite covered with this charlock, while the other portions of the land were clear. But now what is a very remarkable circumstance respecting that farm is this: that whereas the common charlock was formerly the rule over that farm, now it was the black mustard. And this is easily explained when you remember that the common charlock will only produce some 4000 seeds, whereas the black mustard is so prolific as to produce about 8000 seeds to a plant; thus the greater fecundity of this plant enabled it to gain the entire mastery. If you take almost any crop you have threshed, barley, for instance, and having separated the barley, examine the tail barley that is left, you will find a quantity of seeds of weeds. I got a sample of tail barley the other day from Wiltshire, and counted in it no less than 20 different species of weeds: some of the black mustard, some of the common charlock, some of the climbing buckwheat, &c. I was brought to ask, What became of this refuse? "Well," said the farmer, "there's a quantity of barley in it, and it don't do to throw it away, so I throw it about the farm yard, and let the fowls pick it up;" and the result of that was that it got after all into the manure heap, and from thence the seeds were regularly and systematically planted over the farm. To give you some notion of the quan-

tity of weeds that may be found on a spot where manure has been placed, I will mention a striking fact. In Berkshire in 1859 I went into the middle of a grass field, and in a small spot upon which a manure heap had stood, I counted no less than 30 species of weeds which had taken root. Now what would a farmer usually tell me with regard to this? Why, that the weeds were natural to the soil. But the fact was, they were taken there with the manure. There were the common sow thistle, and the corn sow thistle, the gromwell, nettles, poppies, two or three species of chamomiles—in fact all the common agrarian plants, and not meadow plants. On another occasion I recollect going into a field that ought to have been turnips, but I could not see a turnip at all; the whole field had been taken possession of, from one end to the other, by the stinking chamomile. I was naturally curious to know how it got there. It was just this:—The manure heap from which those turnips had been manured was an old one, and on the top of it the stinking chamomile had been growing. This plant will grow better on the top of a manure heap than elsewhere; and each one will actually develop from 60,000 to 70,000 seeds. These, shed on the top of the heap in autumn, were regularly scattered and planted over the field. This shows how without care weeds may be scattered over our fields. If we know such facts as these, we have only to avoid such a means of weed cultivation.

3. Let us now consider the third point—the growing of weeds with crop seeds. I believe until I commenced investigating this matter its value was scarcely understood.

Very frequently with the seeds you buy at market from different seedsmen, you buy quite sufficient weed seeds to become a crop, and cover the ground; you will see that this is a very fertile source of weed cultivation. In one of six samples of clover I have sown I found 21 seeds of common weeds would be sown in every square yard; in another 32; in another of Dutch white clover, usually a foreign seed and very dirty, 66; and in another the enormous number of 174. Suppose you parcel out a square yard, and take 174 seeds, or a quarter of them, and dot them about, and when you are told that some of these will occupy several square yards to itself if it grows well, you can hardly expect a crop to grow, and you see plainly how you must be growing weeds. In order to show you that I do not speak without book I will give you some cases. I have entered very minutely into this matter. I took the trouble of taking pints of various kinds of clover (and a great deal of trouble it was), and ascertained by counting the number of seeds of weeds they contained, and the results arrived at were somewhat remarkable. Multiplying these pints into bushels gave some surprising figures. Here are six samples of red clover. In a bushel of one kind I found 1,085,415 weed seeds; in another 2,524,160. Without troubling you by going through the whole

of this table, I may state that a sample of white Dutch clover contained the highest number of weed seeds I have observed in any sample, and this, too, came from a seedsman labelled as genuine. In a bushel of this I found no less than 7,680,000! Here, then, is the case of this white Dutch clover. With every square yard that was sown of this seed would be sown 174 weeds, which would of course be quite enough to stock any land for some years to come with weeds, however careful you may have been in weeding in previous years. Let us take ryegrass, a more fertile source of dirt than almost anything else. I have examined various samples of ryegrass. In one sample of Italian ryegrass, for example, I found 261,110 weed seeds in the bushel. These seeds are very much like ryegrass—couch grass very often; and some very inferior species of grass. As far as I have seen, with regard to ryegrass, there is not a more fertile source of couch grass than imported ryegrass seed. In a bushel of this seed will be found quite enough couch seed to stock your land, if it has been cleaned ever so much previously. Then, again, there is the common imported Italian ryegrass. The example I have here is one of the dirtiest I have ever found, for it contains 450,560 weed seeds to the bushel. The weeds consist, among other plants, of the creeping crowfoot, one plant of which will occupy several feet if it grows well, which it is almost sure to do, and if it starts amongst seeds, will grow them out in a very short time. Another of the weeds is the heavy lop grass, with no feeding properties whatever, and perfectly useless amongst ryegrass, or, if not useless, it is a grass the seed of which it is too bad to call upon the farmer to pay for, as it entails work upon you for years and years to get rid of out of your fields. There cannot, I am sure, be a more fertile source of weed cultivation than is offered in our common seeds. My examinations of flax seeds also show that you sow weeds very generally when you sow flax. I got several samples of the seed as ordinarily sold. If used for crushing, its value is reduced as much, or perhaps more, than if sown. In one sample of Tulsit linseed, in 100 parts I got 40 parts of flax seed, 44 parts of weed seeds, and 16 parts of dirt. Thus 60 parts were dirt and weeds. In Odessa linseed I found 66 parts flax, 20 weeds, and 4 dirt. In some Black Sea linseed 80 parts seeds 19 weeds, and 1 dirt. In Bombay linseed 95 seeds, 3 weeds, and 2 dirt. So that these show you that, though if you buy cheaply you may get some kinds very dirty, yet that it is possible to get almost pure flax seed in the market. If any of these dirty seeds is used, you get as a result a large number of weeds on your farm. Weeds which you never cultivated or saw will be obtained from those bad foreign flax seeds. Weeds are thus taken to various parts of the world in carelessly collected seed. Our emigrants in India and North America have thus taken our agrarian weeds with them. At one place in the neighborhood of Saratoga Springs

I counted some thirty species of weeds growing as rampantly as in England, they might have been taken to the farm, and there cultivated in the same manner; in fact a great part of our ordinary weeds have been brought from foreign countries. I am constantly having new plants brought to me. Some of them spread very rapidly. These new plants have been brought to us in foreign seeds, and they ought to be an evidence to us of the manner in which we sow weeds. Suppose we don't sow this dirty linseed, but send it to be crushed for oilcake, and the dirt happens, as is very often the case, to be mustard seed or charlock, both of which are hot and pungent—you will have a cake which is frequently destructive to cattle. The number of cases of cattle being so destroyed is more than you would be inclined to believe. Then again with regard to vetches, I can assure you it is almost impossible to get a genuine sample. The corn cockle is a plant that usually grows with vetches, and the flower being purple, like the vetch, it is not noticed. Here are some seeds of it; they are a little darker than vetches. Vetches are often sold containing more than half of the cockle. And as the vetch is a highly nutritious plant, while the cockle has no feeding properties whatever, when you buy them thus mixed you are paying not only for that which is bad in itself, but which dilutes that which is better. There are very few samples that are entirely devoid of that plant; but farmers will continue to buy vetch seed containing the cockle, leading one to suppose that they do not believe there is any mischief in cockle. I do not want to represent that farmers are not observers, for they are, and are looking so closely into these matters that the keenest students of nature can hardly keep pace with them. But in this case probably the close resemblance of the cockle seed to the vetch may cause them to overlook it; and perhaps a little botanical study may be of benefit even to farmers. I will now call your attention to another crop plant, which you do not grow much in the Vale, but which is more grown on the Cotswolds, and that is the sainfoin. There is a weed much taller than the sainfoin, but with leaves of much the same character, and that is the burnet. In the sainfoin the leaflets are not noticed, while in the burnet they are. I have had to give evidence about this in courts of justice. I have seen crops of sainfoin growing 50 per cent. of burnet. It is a large plant, growing strong woody matter amongst the sainfoin, and is of no use as a feeding plant. Instead of a crop of sainfoin lasting six or eight years, it is not found profitable to grow it more than three or four years, on account of this weed. I have specimens of burnet seed, which is light brown, and of sainfoin seed, and at first sight you would hardly see any difference. Here is a mixture of about equal parts of sainfoin and burnet, and from this you will see the difficulty which some persons would have in observing the difference between them notwithstanding the difference in the shape of two seeds.

In a county court I have seen the seed examined by farmers and handed to the judge, and none could see the difference between them but the expert witnesses who were called. Yet a section of the two seeds presented very different forms, one being quadrangular and the other flat, with a broad back, but both being wrinkled and of the same colour, they were liable to pass unnoticed. The evil was thus introduced, and crops of sainfoin now cultivated in this country are not worth half so much as they were ten years ago owing to the extraordinary prevalence of burnet. The seedsman does not separate it because sainfoin seed would be only worth 10s. without the burnet, while it is worth 6s. with the burnet in it, and, therefore, they do not trouble to separate them, especially as farmers do not see the difference, or as when they do, they say burnet grows a bigger plant than the sainfoin, and therefore they get more for their money.

The lecturer concluded by enforcing the absolute necessity of not allowing weeds to seed on the soil, their growth being extraordinarily rapid.

AGRICULTURAL ADDRESS.

BY MR. CROIL, MORRISBURGH.

(Concluded from last number.)

But there are causes—mighty agencies, other than agricultural societies, that have given an impetus to agricultural improvement. Although I may not dwell upon it I shall be guilty of an unpardonable omission did I omit, upon an occasion like this, to bring before your notice the subject of TILE DRAINING, the most important of all the improvements that have been introduced into British husbandry.—The system of under-draining was, we know, practised to some extent by the Romans. A kind of draining by open ditches, and large drains covered in with stones, had long been practised in Scotland. An ingenious system of draining, introduced into England toward the close of the last century, created a great deal of excitement at that time, and even gained for Elkington a grant of £1000 from Parliament, in acknowledgement of the benefit likely to accrue to the agriculture of the Kingdom from his discovery. The novelty, however, of this system died away. To Smith, of Deanston, a Scotch practical farmer, belongs the honor of having perfected a system “of thorough tile draining,” combined with subsoil ploughing, which has resulted in more benefit to agriculture than all the agricultural societies and all the other means of improvement which science and modern practical skill have affected. Already this system has pervaded every county and every parish in the United Kingdom. Thousands of acres of fertile land have been improved in fertility and have doubled and trebled their products. Thousands of acres of cold, wet, inhospitable lands have been render-

ed warm, mellow and fruitful by the mysterious, hidden agency of the insignificant little drain tile, and tens of thousands of acres of bleak mountain steep and dark morass have, by the same agency, been reclaimed from utter barrenness, and become fit for the use of man. This system has ceased to be an experiment.—It has stood the test of more than a quarter of a century, and is as efficacious to-day as it was in 1835. And let me tell you, my brother farmers, that it will prove as efficacious in the level plains and in the swails and swamps of Canada, as it has been in the moors of Scotland, and in the waste places of England and Ireland. And, moreover, let me tell you, it is a system that has already been introduced by our enterprising neighbors to the South of us—by our proverbially slow-going neighbors to the East of us, and by our wide-awake neighbors to the West of us. If then, the farmers of Grenville, and of Dundas, would not be left behind in the march of improvement; if the descendants of the U. E. Loyalists would lay claim to as much enterprize as others, and gain for this part of the Province of Canada a reputation worthy of their illustrious ancestors—they must be up and doing.—It is *possible*, nay more, it is CERTAIN that there are difficulties to be met in the way, but they are such as *can* be overcome, and *must* be overcome, if we would win the laurels and wear them. Upon this important subject I would fain dwell, but having already trespassed upon your time and patience, I must hasten to bring my remarks to a close.

Another important agency in the improvement of British husbandry, following closely in the wake of tile draining was the discovery and use of the GUANO and other important manures. This substance is known to be nothing more nor less than solid excrements of carnivorous sea birds, found in immense quantities on the coast of South America and other tropical countries. Its use in agriculture has long been familiarly known to the Peruvians.—The first cargo of it, however, was brought to England so recently as 1840. The success attending its use created a furore of excitement; the news spread like wild fire of the marvellous effects of this new fertilizer. From almost every port in England, Scotland and Ireland, ships were dispatched to the Pacific for cargoes of guano. The little desert, and uninhabited—save by the wild seagull— island of Ichaboe was surrounded by three hundred British ships at one time, and hundreds of Irishmen with shovels and wheelbarrows were employed in loading them. Suddenly came the stunning news, “Ichaboe has come to an end—the last shovel full of guano has been shipped.” Soon however, plentiful supplies of it were discovered upon other islands and promontories, and private parties bought the right from the Peruvian Government for the consideration of \$40,000. At the end of two years, the trade had increased to such magnitude that the Government cancelled their agreement, and since

that time have retained a monopoly of it. Their Agents, Messrs. Gibb & Sons, of London, are now the sole importers of it, which in a great measure accounts for the exorbitant price which it has hitherto commanded in the market—a price far beyond its commercial value. The chief sources of supply at present are the Chincha islands, off the coast of Lower Peru, which has been estimated to contain the enormous quantity of 45,000,000 of tons; so that for all practical intents and purposes the supply of guano may be said to be inexhaustible. The quantity imported into Great Britain during the year 1854 was 235,111 tons, of which the official valuation in London was £1,231,655 sterling; equal to about £6 10, or \$27 per ton by the cargo. The retail price in Canada of this commodity ranges from \$60 to \$70 per ton. It is used by British farmers at the rate of from three to four hundred weight per acre in addition to the usual supply of farm manure, or in larger quantities when used alone. Like most other special manures, however, it is found to act best as an auxiliary.

Another means of Agricultural improvement may be noticed. Its influence has been largely felt in Canada, and in no one part of Canada, perhaps, so sensibly as in the very County of Grenville. I refer to the introduction of RAILWAYS, with the consequent facilities of transport, not only in conveying our precious carcasses swiftly, comfortably, and economically from place to place—from one end of the province to the other—but in cheapening to the farmer every foreign commodity he has to buy, and enhancing the value of every product he has to sell. With wheat selling at \$1 per bushel, of what avail was it to the western farmer that he could grow 30 bushels per acre against 20 raised in Lower Canada, so long as it costs fifty cents per bushel to convey it to the shipping port. It is evident that the Lower Canadian with the smaller crop realized more money. But when the freight of a bushel of wheat from Toronto, London, or Sarnia to Montreal, is reduced to a few cents, the distant producer reaps the full benefit of whatever advantage he may possess in fertility of soil or salubrity of climate. And so in the old country.—Farmers in Scotland, formerly shut out from the London market, now find themselves upon an equality with Essex and Sussex.—Beef and mutton, salmon, poultry, and dairy produce, aye, and *even eggs for the Cockney's Breakfast*, are daily conveyed from the North of Scotland to London by rail—while hundreds and thousands of acres of potatoes are planted in East Lothian for no other purpose than supplying the same market by the same conveyance, though at a distance of four hundred miles.

Think, too, of the increase in the value of lands in the neighborhood of this system of transportation; why sir, it baffles all attempts at calculation. Much as we have heard of the *Four Millions of good Canadian Dollars*

swallowed up in the much maligned Grand Trunk Railway, I question if any one has yet made the calculation, how much has actually been added to the wealth of the Province by the enhanced value of lands within ten miles of that Railway throughout its entire length, or computed in the other direction the direct loss that would result to Canada from a suspension of that Railway communication.

In great Britain there are 10,500 miles of Railways and they are still being built there at an average cost of £37,000 sterling per mile;—in all £400,000,000 sterling have within the last 35 years been expended upon these works. The United States have no less than 31,800 miles of Railway having cost £7,409 sterling per mile. In Canada we already have 1,826 miles, while it is computed that there are, in the whole world, 66,733 miles of Railways in operation. Whether these railways may have been profitable or otherwise to those who invested their money in them, there remains no doubt but that the agricultural community has been gainers to an incalculable extent.

It has been charged against the Grand Trunk Railway of Canada, that, instead of encouraging settlement it merely carries its passengers *through* Canada to the Western States. Let it do so.—There is a large proportion of the emigrants who go to the United States, whose presence among us were more real cause of regret than their absence.—Let our Railway catch all the freight it can, but,—when a train is formed at Quebec or Portland, freighted with *Republicanism*, it is the true wisdom of Canada, *to put it through*—by daylight if possible—that no time be lost, until every republican rag-a-muffin shall have been deposited at Detroit. At the same time, every facility should be afforded on the other side of the Atlantic, and on this, to enable intending emigrants to make a wise choice in the matter of their destination.

The use of STEAM POWER in the operation of the farm is another improvement of recent introduction which seems destined to have a very important influence upon agriculture. The first steam thrashing machine was introduced into Scotland in 1820, and at the present time, in Great Britain, travel in what direction you may, you will find the tall brick smoke stack towering above the roofs of every farm-steading. This is an improvement we may hope soon to see introduced into Canada.—Steam-engines are now made so portable, so cheap, and so easy of management, that they may be set down almost in our barn-floors, and do our work more economically, and certainly far more satisfactorily, than by that most barbarous of all modern machinations—the revolving platform horse power.

The advancement in mechanics through the agency of steam, has been immensely serviceable to agriculture. Every implement that we require to use is furnished to us at a cheaper rate and of better construction. Our reaping machines, and threshing machines, fanning mills,

ploughs, harrows, hoes, spades and shovels, are now made, in whole or in part, by steam power, and yet it would really seem that the application of this agency, which has revolutionized the world of commerce and manufactures, is but in its infancy in connection with agriculture. Many years after steam had been successfully used in the propulsion of vessels, men of science demonstrated plainly (at least to their own satisfaction) that the navigation of the Atlantic by steam power alone was impracticable. We have lived to see the triumph of steam in that direction, and in other ways as unlooked for, and it needs no other prophet to predict for it further triumphs in relation to agriculture.

The steam power employed in Great Britain in 1851 was estimated as equal to the united forces of six hundred millions of men. It is computed that 40,000 men are constantly employed in mining coal enough to move this vast aggregate of machinery. The population of Great Britain at that time was 21,000,000, each of whom, man, woman and child had thus thirty willing slaves to do their work.—“Slaves that never tire, never fall sick, need no clothes, and eat only fire and water.

In the agricultural department of the Great Exhibition recently held in London, unmistakable progress in the exhibition of implements and machines is the distinguishing characteristics, and the most remarkable feature there—the department of steam cultivating mechanism. A writer in the Highland Society's Journal, in treating of this department says:—“So rapidly has the power of steam been accepted as practically available in the field, that to a great extent, in some districts, is the occupation of the ploughboy gone. Literally the smoke of the many steam engines hangs in clouds over the green fields over which the steam plough is dragged with a power greater and more steady than a dozen horses. Already has the day-dream of our enthusiast in steam culture in part been realized; for ‘o'er the lea’ on which the ‘ploughman plods his weary way’ is heard the scream of the steam whistle, and is seen the wave of the signal flag. A revolution in culture has been fairly and fully inaugurated. Anticipating future, from its past triumphs, we see, in imagination, the steam engine, pioneer of true progress, placing itself amid, and rapidly bringing tracts of our dreariest deserts into smiling fields.”

Here then is a field on which we might enter and linger with interest and with profit for hours together. My time has only permitted me to mention it, and the mention of it suggests another agency, one in which we cannot fail at this moment to feel a deep interest. I promise you it is the last I shall mention. It is the benefit accruing to agriculture from EXHIBITIONS, great and small.

Much as Agricultural Societies may have done by awarding prizes for excellence in the varied departments of Agriculture, or for reports on the same, it does not admit of a doubt that

periodical exhibitions of the products and manufactures of any country or district are by far the most convincing and reliable indication of the industry and success of its inhabitants, that can possibly be given. Practical farmers, as a class, have a decided antipathy to having “the wool pulled over their eyes” by those whose education may perchance be better than their own. With them, flowing reports and grand speeches are all very well, but “*seeing is believing*.” And while Agricultural Societies may, with all propriety, make use of reports and speeches as means of improvement, it is manifest that without an exhibition of what has been done, many would be disposed to question the correctness of conclusions drawn, and statements advanced, in reference to agricultural improvement.

We know that the Great Exhibition of 1851 originated in the mind of that good Prince whom we all lament to-day, and it is more than likely that it was suggested to his mind by the success attending the annual exhibitions of the Royal Agricultural Society, of which, as already said, he had long been a member. That this bold and novel experiment was eminently successful is demonstrated in a number of ways. The very building in which it was held was an exhibition of itself, such as the world never saw before—a fairy palace of glass and iron, covering an area of 21 acres of ground. The building in the centre of the British metropolis, was not designed to stand there as an exponent of British greatness, alone—not that Britain might stand out as laying claim to be the most enlightened nation of the age—but, that while shewing to other nations wherein she excelled, she might, in turn, learn from them to see her own deficiencies. To this the people of all nations were invited to bring samples of their products and manufactures. The proposal met with universal approval, and the result far more than realized the highest expectation formed of it. It may seem a small thing to say that it *paid* in a commercial sense, yet so unlooked for a result is worthy of record, that after all the expenses attending it were defrayed, there remained in the hands of the commissioners the sum of £170,000 sterling.

By this great exhibition an impetus was given to the arts and sciences, to manufactures, commerce and agriculture, such as had never been dreamed of. The productions of far distant lands, hitherto supposed to be peopled with semi-barbarous populations, and among them our own Canada, were here placed side by side with the old countries of Europe. The creditable display made by the British Colonies opened the eyes of British statesmen to their importance, and contributed in no small degree to introduce Canada to the notice of those who knew little or nothing of her before.

Perhaps the most noticeable feature in the agricultural exhibition of 1851 was the presence of two reaping machines from the United States.

No attempt had as yet been made to reap by machinery in England. Indeed up to this time England was not prepared for reaping machines. Labor had been abundant and cheap, agricultural machinery of all kinds imperfectly constructed and high priced. Now, however, matters were reversed.—Fields of industry had been opened up, and happy homes provided in the "new world" for many thousand of the redundant population of Great Britain and Ireland. Labour had become less abundant, and in many places the reaping hook had been supplanted by the sythe or the American cradle. Under these circumstances the appearance of reaping machines was opportune, and secured for them every consideration. They were subjected to a thorough test—were highly approved, and to the reaper of Mr. McCormick was awarded the gold medal of the great exhibition.

No doubt this was a good stroke of business for Mr. McCormick. It served, however, another purpose. It brought to light the fact that a reaping machine, similar in its main features, had been exhibited, had received a prize of fifty pounds from the Highland Society of Scotland, and more strange than all, had actually been in successful operation during *twenty six years* previous to 1851. Soon there were champions in the field not only to claim the invention for Scotland, but to claim that the old rickety machine of the Reverend Patrick Bell would do more work and do it better in a given time than the American. Several trials in consequence took place in the presence of immense numbers of interested spectators.—McCormick wisely resting upon his laurels, avoided competition. The particulars need not be stated here, suffice it to say that on each occasion the old Scotch reaper distanced every competitor, including the other American, (Hussey's).—Mr. Bell at last began to see the value of his invention, secured a patent, and entrusted the manufacture of it to an eminent English machinist. That was the exhibition of 1851 instrumental in introducing into England a valuable implement, and in securing to my *bashful* countryman the credit which had been assumed, and was on the point of being conceded to an American. I would not, however, detract one iota from the credit due to McCormick for his wonderful perseverance in bringing into notice this most important labor-saving implement. His efforts have been amply rewarded at home and abroad. It is even probable that he has already accumulated more money from the manufacture and sale of reaping machines than was ever realized from the sale of any piece of mechanism of equal value. I need not tell our American friends present here to-day, that on the expiring of his patent a short time ago, he was refused a renewal of it by the U. S. Patent Office Commissioner, chiefly on the ground that he had already received from the public adequate remuneration for the invention claimed. Mr. McCormick submitted in evidence to the department when applying for a renewal of his patent that he had *only* realized

the sum of \$2,409,251 22-100ths of manufacturing profits.

The distinguishing feature of the exhibition of 1851 was NOVELTY. The exhibition of 1862 is remarkable as indicating PROGRESS, and nowhere is that progress more remarkable than in the mechanical department of the agricultural division. Here are to be found portable steam engines, thrashing machines, steam ploughs, steam cultivators, steam labor saving machines in endless variety. The inventive genius of man, however, has not stopped short with these, for here, too, though it may seem to be descending from the sublime to the ridiculous, may be found a machine by which the process of milking can, it appears, be performed with "*the greatest possible pleasure and comfort to the cow*," speaking of which, my Lord Derby, at a recent agricultural dinner said, "It is difficult to understand how the inventor had ascertained the experience of the cow, under the operation."

What may be said of these great international exhibitions, may, in a limited sense, be predicted of every county agricultural exhibition, in carrying out which a well directed effort has been made for the advancement of agricultural interests. There may be much sameness year after year in such exhibitions as we have witnessed to-day, yet we are not on that account to ignore their usefulness. If, only, each year exhibits PROGRESS in the various departments, we may rest satisfied that the society is exerting an influence for good. Apart from other considerations, I believe it is a good thing for farmers to meet together once in a while without distinction of party, of sect or nationality; for true is it that "As iron sharpeneth iron, so a man sharpeneth the countenance of his friend." Here the man of narrow prejudiced mind may, if he will, have his prejudices removed most satisfactorily; here the most knowing among us, if we really wish to learn, *may learn something* that we did not know before; here all of us who enter the list of competitors may, if we will, "see ourselves as others see us." Here, too, (and oh, what a blessing to society) "the wretch concentrated all in self!" the vain-glorious one, puffed up with self-esteem, will, if he competes, most certainly get "taken down," and hence he may go home, "a sadder, but a wiser man."

A few of the agencies which have tended to the improvement of agriculture, have thus been noticed. It has been stated that one hundred years ago agriculture had reached a low ebb indeed. Another sad fact will be acknowledged in conclusion, that from the year 1240 to 1320, not a single Baron was to be found in all Scotland who could sign his own name.—The irresistible inference is, that for all these improvements we are indebted to the ceaseless activity of EDUCATED MINDS; and the conclusion to which we are led is that if *we* would be esteemed benefactors of our race, we will do what we can, as communities and associations, and individuals, to elevate the standard of education among us.

It is a grand mistake to suppose that a good

education is thrown away upon a farmer. If our farmers are content to jog along in the old way, as their fathers have done before them, it is pretty certain that they will always be able to make out *a living*, but we cannot hope that Canada will ever add much to the general stock of agricultural knowledge, unless we impart to our sons a higher education than has usually fallen to the lot of the Canadian farmer. There is an idea abroad that farmers have no need for a classical education. I should like to know the reason why. I think, sir, they have just as good reason to study mathematics and Latin, and Greek, too, as any body else. If the study of these expands the mind of the merchant, it will expand the mind of the young farmer, too. If it enables the physician and the lawyer to comprehend the technicalities of their profession, it will familiarize the young farmer with the correct meaning and the correct use of his own language, and that is a very important matter. That much depends upon the ambition of the young men themselves, we see every day exemplified. If one of the farmer's sons expresses a desire to become a doctor or a lawyer, with what alacrity do not the parents make many sacrifices in order that he may obtain the best education the Province affords? Is it not evident that we live in a country pre-eminently agricultural? Is the time not drawing near when we may say of doctors and lawyers, without the slightest disparagement to their professions, that *we have enough of them*? Then what in the name of common sense is to become of our young men of ambition? Carried away with the false idea that the quiet, plodding life of the farmer is too humiliating for *them*; already some of them have found their way to Australia, to California and Carriboo; there for a while they toil like galley slaves; they come back again—they tell us "*There is no place like Canada.*" I would only say, then, to the farmers of Grenville, give your farmer boys as good an education as you can afford. By so doing you will most surely contribute to *their* happiness through life, and to the progress and prosperity of our common country.

I have now only to thank you for your kind attention to my remarks, and to bespeak from the farmers of Grenville now before me, a cordial and unanimous support for their agricultural society. In doing this you place a powerful AGENCY for good in the hands of its directors, one which will do much for the cause of improvement around you. May the efforts of the South Grenville Agricultural Society to improve the agriculture of this part of Canada, be crowned with success.

FLAX CULTIVATION.

EDITOR OF THE AGRICULTURIST.—DEAR SIR,—Now that spring is fast approaching, when farming operations must necessarily soon commence, it is to be hoped our farmers will give

flax that attention it so well deserves, and those who were disappointed last spring, owing to the great drought, must not fail to make the attempt again, knowing well, as they do, all other crops suffered materially also.

While comparatively little is doing in the Home district, other parts of Western Canada are making good use of their time; several new scutching mills have been erected within the last two years, and in no instance, when the farmers can avail themselves of this facility for preparing their flax for market, do they fail in taking advantage of it. At Elora, where a small mill was erected a few months ago, no less than 70 acres were grown in that neighborhood last year, and from the profit derived from it over wheat, the probabilities are we shall hear of 700 acres being cultivated in that locality this incoming summer. Several of Rowan's mills, in addition to those imported last year by the Canadian Government, have also been brought to the Province by private individuals. Several new companies are springing up, not only for the purpose of scutching and preparing the raw material for a foreign market, but for the purpose of spinning and weaving.

The success of the Messrs. Perine Bros., of Waterloo, is a convincing proof of the profit attending this new branch of industry. In addition to four extensive scutching mills in different parts of that county, they have erected at a very heavy cost a large manufactory in the village of Doon, on the river Speed, with machinery for spinning and weaving, as well as scutching flax for the farmers. This is a guarantee for the farmer, he need not be afraid of the want of a market in future. Mr. McCrea, of Guelph, has also become a purchaser of the raw material, and will, no doubt, extend his operations to other market towns as well as Guelph, as soon as there is a sufficient quantity of demands on the market.

During the last few weeks I have had communications I may say from all parts of the Province, inquiring where seed can be procured. In reply I have recommended parties to the house of Messrs. Lyman, Elliott & Co., Toronto, and the various flax millers in the Western part of the Province, for sufficient for the years' sowing, but in all cases, when it is possible, the best imported Riga seed should be used; and it is to be hoped there will be sufficient demand in another year to warrant our merchants in making it an article of import. In the eastern townships in Lower Canada the farmers are going into it with a will, the British American Land Company, at Sherbrooke, having already secured one of the mills from the Government. Their active Commissioner, Mr. Heneker, has also sent home for a large quantity of Riga seed to distribute to the farmers on their lands, and to others desirous of obtaining it. This example would be well worthy of imi-

tation by the Upper Canada Board of Agriculture, and every encouragement should also be given by the Canadian Government.

Truly yours,

J. A. DONALDSON.

Weston, March, 1863.

CULTURE OF TOBACCO.

Although personally not an admirer of the weed, or an extensive user of the article, yet as it is considered almost a necessity for many, and as the southern production is limited, in consequence of the war; the taxation heavy—prices high, &c., it is our duty to make some suggestions in regard to growing tobacco.—ed to much of the soil in Michigan is well adapted. That its successful cultivation there is no doubt, as we know of instances where twenty acres have been seeded to this crop, with the most profitable results. Even within the last few days we have had its fumes puffed under our nose by the lucky possessor of a real meerschaum pipe, who owns a city lot, with the exclamation, "what do you think of Detroit tobacco, we shan't have to go South for it now, and they may put on all the tax they want to, I don't care, as I can raise my own," until we have concluded that he is nearly right. Large quantities are raised in Canada. The seed best adapted to the wants of the soil and climate in this State, is that to be procured from Connecticut, where the plant has been thoroughly acclimated. Every farmer can easily devote a small patch to its cultivation, if he "delighteth in the quid and pipe," for home use. A sixteenth of an acre well selected and attended to should supply his wants. We give the following excellent suggestions in regard to growing tobacco from a practical source.

To grow strong tobacco plants the ground must be well prepared and worked very fine. In preparing the seed bed it has been found the best way is to light a large fire on the ground: the soil is then rendered loose and friable, and is easily reduced very fine. If it is not convenient to make a fire, mix the earth with a large dose of wood ashes and small charred dust. By this means the ground becomes so loose that when the plants are ready for transplanting, a good sprinkling from the garden pot will make the ground so soft that each plant will bring with it a small ball of earth, which almost insures the plants growing; and it must be borne in mind that the young tobacco plants require very careful handling. It is better to have a large shallow basket or box to carry the plants in when transplanting, as by this means the plants do not lose the ball of earth, or get bruised so much as if taken in the hand.

The seed bed being made fine with the rake, take the seed and mix it well with ten times (by bulk) as much fine earth and ashes. This enables you to sow the seed so thin that in draw-

ing the large plants you do not disturb the smaller ones. The ground being prepared, and the seed well mixed as directed, proceed to sow, taking care to sow the seed as equally as possible. Do not rake in the seed, but give the bed a slight beating with the back of the spade, and see that the earth does not rise with the spade. The time for sowing is in April. Let the seed bed be in a sheltered position. When the plants are about the size of cabbage plants usually they may be transplanted. A cloudy or even a rainy day is best for the business. The ground for the crop should be well worked and well dressed with decayed manure; it is better to have two shingles to stick on end in the ground, meeting over the plant to protect it from the noon-day sun or nipped with the morning frost. A light, sandy soil suits tobacco best, if well worked and manured. Plants, to be successfully grown, should not be less than two feet apart each way. Three feet is the Virginia system; this gives ample room for a vigorous strong growth. Before the plant is set, the earth should be drawn up into hills with a hoe, and well-rotted manure mixed in them.

After the plants get well to growing they should be hoed as often as is necessary to keep them entirely free from weeds; a sharp lookout should always be kept for the "tobacco worm," which delights in committing ravages on this plant; and if not promptly attended to, this reptile will soon destroy a crop. Some turn in turkeys after the plant is well grown, who soon clear the intruder. This worm is about 1½ inches in length, and should be looked after every day.

When the plant begins to head it should be immediately cut back, so as to leave from six to ten leaves; suckers then begin to spring out at the junction of the leaf and stalk, these should be nipped off, (some however let them grow until six inches long, and then pick and dry them, thinking them more choice for various purposes than the larger leaves), as if allowed to exist, they will take much from the full development of the main leaves.

Planting is done in May, hoeing and overlooking in June, July, August and September, cutting and housing in October; the other months in moist weather, to the pulling leaves off the tobacco-stalks. In the Southern plantations an industrious man and woman are allowed three acres to manage. When ripe the stalk should be cut off near the ground. When tobacco is ready to cut up, it *must* be attended to or it will spoil, especially if frost is expected, there should be no time lost.

Tobacco of commerce is generally divided into three qualities. The lower leaves or which touch the ground, are liable to get dirty and torn; but on the higher parts of the same stalk two different sorts of leaves are generally found, one yellowish and one brown. These should be carefully separated and put up in bunches somewhat thicker than a man's thumb, and tied

round with a thong made of the leaf itself. The bunches should be slung in pairs across poles and put in the drying house. Great care should be taken of the fires, as too much heat and hurry will spoil the whole crop; if the houses get too hot the finest qualities of the leaf are destroyed, as the real substance is burned out, and only the coarse vegetable matter left.—More depends upon proper drying than any other part to determine its market value.

The culture of tobacco is said to be exhausting to even new land. In Virginia the land will sustain only two, or at most, three crops.

Tobacco of fine quality has been raised on the farm of C. K. Carpenter, in Orion, Oakland county, which has been manufactured into cigars, and is considered equal to Havana by those who are good judges. We have not the least doubt that enough can be cultivated in Michigan to supply the home demand, and that farmers can realise large profits at the present high prices. Let them try a small patch this year, just by the way of experiment.—*W. S. B., Michigan Farmer.*

THE LAWS OF CULTURE OF THE LAND, ACCORDING TO LIEBIG.

[TRANSLATED FROM THE FRENCH OF THE "JOURNAL D'AGRICULTURE PRATIQUE," EXPRESSLY FOR THE "MARK LANE EXPRESS."]

To enable the farmer to cultivate in the most profitable manner, he should know what are the constituent parts of plants, and also by what means these plants obtain nourishment.

The growth of plants, the manner in which they appropriate to themselves the elements which contribute to their nourishment, and the nature of those elements themselves—all this was formerly enveloped in mysterious obscurity. In these modern times the natural sciences have sufficiently progressed to teach us what it is necessary to know to guide us in the culture of plants which the care of man assuredly should develop.

The constituent parts of plants are of two kinds, *gaseous* and *solid*; they are also called *organic* and *inorganic*; the latter are parts that resist the action of fire—the ashes, or mineral parts. If we proceed to consume a plant by fire, the gaseous part will fly into the air, while the other will remain in the form of ashes. The proportion of gases in a plant is found to be much larger than the solids. 100 kilogrammes of fir-wood burnt only leaves $\frac{3}{4}$ kilo. of ashes, wheat-straw nearly 5, pea-straw 9, clover 11.

The volatile or combustible parts are oxygen, azote, hydrogen, and carbon. The solid parts—those that after combustion are found in the form of ashes—are phosphoric acid, potash, silica, sulphuric acid, lime, magnesia, iron, and salt.

Of these elements, *four* volatile and *eight* solid, are formed the bodies of plants; conse-

quently they are the food of plants. The gaseous elements, or otherwise organic principles, are absorbed by the leaves and branches; the roots also take in gaseous aliments when they are in the earth.

In order that the leaves and branches may be able to absorb the gaseous principles, the surface of them is provided with very minute parts. The roots absorb these ailments by their very fine extremities.

To enable the plants to assimilate the nutritive principles, it is necessary that the latter be placed at their disposal in a suitable condition. The volatile principles are, for the most part, absorbed under the form of water, ammonia and carbonic acid; it is only as bodies in solution that the solid parts can pass into the organism of plants.

The various productions from prevailing vegetables are the results of diversified combinations of the four volatile and eight solid principles. Thus, tartaric acid is composed of one-fourth carbonic acid, one fourth hydrogen, and one-fifth oxygen; essence of turpentine is composed of 10 parts carbon and 10 parts hydrogen; 2 parts azote, 22 of carbon, 30 of hydrogen, and 3 of oxygen form the elements of *atropia*, that violent poison which belladonna contains.

The fibres of wood (cellulose) and fecula contain precisely the same elements—6 parts carbon, 5 parts hydrogen, and 5 parts oxygen—nevertheless cellulose and fecula are two very different substances.

The gaseous, or organic, elements, in accordance with their nature, are found everywhere all over the world. The solid, or inorganic, are fixed to a point from whence they can only be removed by extraneous force. The result is, that the gaseous elements are inexhaustible. The motion of the air, and its tendency to preserve its equilibrium, carries them wherever they are needed, or wherever they seem likely to fail.

With the inorganic elements it is quite the reverse; they are not all found in every country, nor in large quantities. The faculty which plants possess of assimilating the organic principles contained in the air and earth, has some limits, partly imposed upon them by their nature, and partly by the appropriation of inorganic and solid substances. *A certain analogy must exist between the two kinds of elementary substances in plants.*

In order that plants may be able to absorb and assimilate a certain quantity of gaseous elements, there must exist a proportionate quantity of solid elements. The plant can only take in and retain as much of the gaseous elements as it can digest with the help of the solid elements. The composition of plants is the same in all places; the relation between the gaseous and solid elements is always alike in the same plant.

When a plant does not find in the earth the

inorganic substances necessary for its development, it can no longer receive the quantity of organic elements that are necessary for it; its development is checked—in other words, it does not thrive. Supply to the earth the elements that are wanting, and the plant will flourish.

But as all plants do not need an equal quantity of these solid principles existing in the earth, it explains why one plant may thrive in a spot where another will die. If only one of the substances necessary for the plant is wanting in a soil, it will not thrive: the other elements cannot supply what is wanting.

If the soil contains more solids than the plant can absorb, the excess remains in the earth, and if it is in sufficient quantity it may produce a second crop.

The facility which plants possess of appropriating substances to their nutrition is in exact proportion with the extent of surface and the number of organs appointed to fulfil that function, viz., leaves, roots, and branches. For this reason a plant which is abundantly supplied with leaves or roots, may still prosper where another would languish. The cereals having only narrow leaves and weak roots require a highly-manured soil. In the torrid zone the cactus, with its large, fleshy leaves, thrives even upon the parched rocks. How different, too, are the roots of a plant of lucerne from those of the wheat plant!

The existence in a soil of all the substances necessary to the organization of plants, does not, however, suffice to secure the development of those plants. They also require favourable physical conditions, such as air, light, heat, and moisture. No plant prospers deprived of air and light; without heat and moisture the richest soils remain unproductive.

The earth possesses the wonderful property of attracting the substances which serve for the nourishment of plants, taking possession of them and retaining them until it comes in contact with the roots of plants. It is remarkable that with an aqueous dissolution, the earth only extracts those principles which are useful to plants; it does not absorb those which would be useless or injurious to them. Without this beneficent property which cultivable earth possesses, the substances which serve for the nourishment of plants would be carried away by water into the subsoil, and lost to the greater part of our crops.

This power of absorption in cultivable earth has, however, its limits; from the moment that it is satisfied it can imbibe no more. It also varies, according to the nature of the soil; it exists in the greatest degree in clay, and least in sand; between these two extremes are placed chalk and the different mixed soils.

The roots only take their nourishment from

those particles of the cultivable soil with which they come into immediate contact, through the finest extremities of their radicles. The absorption takes place by the co-operation of an organic acid contained in the last cell of the radicle. It is probably, in the nature of this acid, that the faculty exists, which the roots possess of choosing the substances that suit them.

It was believed, for some time, that plants could only assimilate the nutritive elements when they were in a state of aqueous dissolution; this opinion is false as regards any but aquatic plants.

As plants only draw their solid nutriment from the soil by the extremities of their radicles, the quantity of nourishment contained in the earth must be much greater than that which is absorbed by one crop.

If we admit that the radicles of plants come into contact with the hundredth part of the earth, it follows that the nutritive principles stored in the soil are to be found there in a proportion a hundred times greater than would be strictly necessary to the development of the plants.

The bed of cultivable earth has yet another remarkable property—that of absorbing from the air and from the subsoil watery vapours, carbonic acid and ammonia. By the absorption of water or moisture the arable land is warmed; this remarkable phenomenon may be proved by direct experiments. Land which has been mellowed and well manured possesses this property in a higher degree than a hard poor one.

The absorption by the earth of carbonic acid and ammonia is favourable to the dissolution of mineral substances. Flints cannot be dissolved in pure water, but they can in water that contains carbonic acid and ammonia.

Stable dung or farm dung is a normal manure; it contains all the principles necessary for the nourishment of plants; for this reason it is the most certain in its action. It contains all the constituent parts of plants, but not all in the same proportion in which they existed in the cereals and fodder; for the entire elements of the crops are not converted into dung, the grains having received another destination, by which a considerable quantity of phosphoric acid has been carried off the land.

Stable dung has also a physical action upon the soil; it communicates heat to it, and during its decomposition into water, carbonic acid, and ammonia, it contributes powerfully to the dissolution of mineral substances. The effect that dung produces by this physical action is often greater than that which it produces as the food of plants. These simple principles which have just been set forth explain all the other phenomena.

TABLE,
INDICATING THE QUANTITY OF ASHES (INORGANIC REMAINS OF ALIMENTARY SUBSTANCES) TAKEN FROM
THE SOIL BY AN AVERAGE CROP.
According to Fresenius.

	Potash.	Soda.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silica.	Chlorides of Potassium.
	Kil.	Kil.	Kil.	Kil.	Kil.	Kil.	Kil.	Kil.
Wheat.....	32.54	3.32	12.92	4.40	20.30	20.58	129.34	5.76
Rye	21.38	1.88	9.08	4.84	15.22	57.70	57.62	0.72
Barley	68.92	6.33	21.64	15.76	38.46	33.76	140.88	23.88
Oats	21.64	14.66	9.60	10.26	12.20	20.36	91.56	3.08
Peas	24.52	9.22	57.25	13.02	21.74	17.16	22.56	8.66
Vetches	55.50	3.00	51.26	10.82	18.70	4.36	11.86	4.06
Beet-root	145.42	20.14	34.04	17.60	21.32	15.00	25.40	34.86
Potatoes	102.70	1.12	38.98	22.48	34.34	18.52	44.84	13.34
Colza	50.52	11.70	55.40	15.56	50.40	46.06	3.50	55.46
Tobacco	60.76	1.14	92.82	29.04	10.92	10.36	28.70	24.52
Red clover ..	144.00	119.22	158.40	47.80	36.28	18.36	28.80	34.56

(To be concluded in our next)

KOHL RABI.

EDITORS OF THE AGRICULTURIST.—*Gentlemen,*
—From your notices of kohlrabi, I was induced last year to try a small patch. I must say the result was not such as to tempt a repetition, but I attribute the failure in a great degree to the extraordinary season (very late in opening and then succeeded by long continued dry weather) and trust to be more successful this year.

It was not until May 3rd that I could get a bed ready to receive the seed in the garden, and, having seen in Lawson's remarks that "insects do not injure it," I never anticipated any danger from the fly; but all the sowings were taken off as soon as they appeared above

ground, until 14th June, when I sowed a few ridges in a field with turnips. The rows were 27 inches apart, and from 20th to 22nd July I thinned and transplanted to about 16 inches, which I thought sufficient space at that season of the year. Never having seen the plant before, I do not know how it usually grows, the leaves were very large, and I consequently expected large bulbs, but none of them exceeded 3½ lbs. The leaves appeared to be excellent feed, but of the comparative value of the bulbs for feed I have not had an opportunity of judging, as it is still unconsumed. It keeps well and was unaffected by severe frosts in the early part of November.

I am, &c.,
BRIAR.

County Carleton, March, 1863.

A MARKET FOR RAW FLAX.

Editor of the Canadian Agriculturist.

DEAR SIR,—Will you be so kind as to inform me through the *Agriculturist*, whether or not there is any market for *Flax stalks*, and what is their value per ton, and who buys them?

I have perhaps a ton or more, they were pulled as soon as the seed was ripe, were carefully housed, and are still in good condition.

I have heard many complain that it does not pay to grow flax for the seed only, and I feel fully persuaded that until there is a regular market open for the sale of the stalks, flax growing throughout the country will never amount to much.

Yours respectfully,
JOHN S. SNELGROVE.

Cobourg, Feb. 26, 1893.

[We do not know of any one at present prepared to purchase flax in the raw state. Mr. McCrea, of Guelph, we understand is prepared to purchase any quantity of dressed flax, and probably there may be purchasers in this city. We shall be glad to be informed if there is any establishment where flax is bought in the straw.—Eds.]

GALLOWAY CATTLE.

TO THE EDITOR OF THE AGRICULTURIST:—*Dear Sir:*—As a constant reader and admirer of your valuable journal, I take the liberty to propound the following queries, respecting a breed of cattle which I have heard a great deal about, namely the "Galloway" Cattle. From what I saw of them at Kingston and Hamilton Provincial Exhibitions, I am inclined to believe they would be a most suitable breed of Cattle for our severe climate of Lower Canada. But wishing for further information upon the above, I ask the following questions.

1st. Would the Galloway Cattle produce a suitable cross with the native stock of Lower Canada?

2nd. What is the average yield of milk from each cow per day?

3rd. And how much butter per week?

4th. And what could spring calves, from one to two months old be bought for?

By answering the above in your next impression, you will confer a favour upon

Yours &c.,

MATTHEW DAVIDSON.

County of Quebec, C.E. Feb. 21, 1863.

[We believe the Galloway Cattle would prove to be well suited to the climate of Lower Canada. We shall be obliged to some of the special advocates and breeders of this kind of stock if they will reply to our correspondent's queries in detail.—EDS.]

BOARDS OF AGRICULTURE.

A late number of the Official Gazette contains the following notice:—

BUREAU OF AGRICULTURE AND STATISTICS.

Quebec, 19th February. 1863.

The following Gentlemen have been elected Members of the Boards of Agriculture in Upper and Lower Canada, for the present year:

UPPER CANADA.

The Hon. D. Christie,
Wm. Ferguson, Esquire,
Asa A. Burnham Esquire,
Dr. Richmond.

LOWER CANADA.

The Hon. L. V. Sicotte,
Major Campbell, C. B.,
The Hon. U. Tessier,
The Hon. J. E. Turcotte.

F. EVANTUREL,
Minister of Agriculture.

BUTTER MAKING.

We beg leave to direct attention to a valuable article on "The Canadian Butter Trade" in the Dairy department of this number, received from a correspondent in Scotland.

It is a generally admitted fact that a large proportion of the butter brought to market in the cities and towns of Canada is not of so good quality as it should be. An improvement in this respect is highly desirable.

HINTS ON PLANTING CORN.

EDITORS OF AGRICULTURIST.—There is an old adage or saying, that the man who could make two blades of grass grow where only one grew before, would be considered a benefactor to his country. But how much more would the rule apply if two ears of corn could be made to grow where only one grew before.

My attention has been drawn to this fact, from observing that corn is almost invariably planted too thick to allow of the stalks and leaves developing themselves, and maturing at least two ears on each stalk. The most careless observer must know that every plant, from the most minute weed to the oak the monarch of the forest, occupies a certain space, and will cover a certain area if allowed to develop itself. So it is with corn, it must have room to grow.

Corn planted in hills 30 inches apart, with four stalks to a hill generally speaking will have one ear on each of three of the stalks, and the fourth stalk blank. Again, plant corn in hills 3 x 3 feet apart with five stalks in a hill, and it will be found that improvement will have taken place, for although every fifth stalk will be blank, by way of balance every fifth stalk in the hill will have two ears. Yet again, plant corn in hills 4 x 4 feet apart with five stalks to a hill, everything else being equal, it will be found that every stalk will have two large well developed ears, and sometimes even a third ear on the same stalk, while the blank stalks will be few and far between.

The above is no theory, but the result of close observation for a period of over forty years in this Canada.

A. W.

Maitland, County of Grenville, 1863.

QUALITIES OF GRASSES.

The subjoined remarks, from the *Boston Cultivator*, refer to a subject that is daily becoming of more importance in the older sections of this Province, and is intimately connected with every sound system of improved husbandry, particularly of sheep and cattle:—

Late writers on grasses have generally been governed to a considerable extent, in their estimate of the nutritive value of species, by the result laid down in Sinclair's "*Hortus Gramineus Woburnensis*," a work published many years ago. Various species of grasses were subjected to analysis by Sir Humphrey Davy, and the results obtained were taken as the basis of their nutritive value. As the science of chemistry has advanced, however, it has appeared that the formula adopted by Davy in the analyses alluded to, was imperfect in reference to the end proposed. He relied on the soluble elements obtained from grasses by the action of boiling water, as indi-

cating their proportions of nutritive matter. This is fallacious, inasmuch as it has been proved that the Albuminous matter—of which there is the greatest amount while the grasses are in a comparatively green state—is rendered insoluble by the action of hot water.

A late English writer, in an essay on grasses, speaks of the investigations of Sinclair and Davy, above alluded to, as follows: "The fact is certain that the work has not afforded one single practical fact for adoption, and that no agricultural advantage has been derived, nor will be procured from the laborious production.—Spaces of ground two feet square, placed under one influence of soil and climate, were not capable of establishing any practical result; the experiments were too confined, and not sufficiently often repeated—the variations of soil and climate were not in attendance, that are so very essentially required in the practice of agriculture. The statements are not only at variance, but in direct opposition to the most enlightened practice and the established experience on the subject."

A mistake which American writers on grasses have very commonly fallen into, is recommending species for cultivation in this country according to their supposed value in England. Many kinds which do well in that country are wholly unsuited to this, on account of their not being adapted to this climate. Besides this, writers, both in England and in this country, have in many instances had very little practical knowledge of grasses, and have often recommended species which are not, *anywhere*, adapted for the purposes for which they are recommended. The writer of the essay above referred to, enumerates six species of grass as being of the greatest value to the British farmer. These are Rye-grass, Meadow-fescue, Cocksfoot, Cat-tail, Dog-tail, and Fox-tail. We give some of his observations in reference to these species, together with remarks in regard to their adaptation to this country.

Rye-grass is the most generally cultivated species in Britain. It is considered the best for sowing with clover, for hay. The writer referred to says:—"The plant rises early in the spring, and is much relished by all kinds of grazing animals. For the purpose of yielding a crop of hay, and then remaining two or three years in pasture, the rye grass has not found any superior. The statement in the '*Hortus Gramineus Woburnensis*,' that some grasses are superior to rye-grass as 9 and 13 to 1, is wholly inadmissible, and must be reversed in the case of agricultural use, whatever the value may be in the hands of the chemist."

The species here spoken of must not be confounded with the Italian rye grass, which is not a perennial. It is chiefly valuable where liquid manuring is practised. It is not hardy, and will only produce well for one or two years.

Perennial rye-grass has been tried in this

country. More than twenty years ago the writer experimented with it to some extent. It is a sweet, nutritive grass, starts very early in the spring, but is not sufficiently hardy to withstand our severe frosts. Italian rye-grass is still less adapted to our climate, and is worthless for general cultivation here.

"The meadow-fescue grass comes next to rye-grass in sending up a number of level stems, and in likeness to a grain crop; but it fails in readiness of growth on a variety of soils, and in produce of herbage. The seed is abundant, and the foliage is much relished by cattle. The plant is very valuable, and stands next to rye-grass for hay of one year, when 6 lbs. of seed are sown on an acre, and to remain in pasture for two or three years. For strictly permanent purposes, 2 lbs. are used. The seeds weigh about 14 lbs. per bushel."

This grass is often found growing spontaneously in this vicinity and in some other sections of this country. It is a valuable species,—much more so than rye-grass,—under our climate, as it is perfectly hardy. Why it has not received more attention from our farmers, is not known. It is adapted to rather moist, strong soils, where it starts very early in spring, and makes a regular and constant growth till hard frost comes in the fall. It is best adapted to pasture, though it makes good hay, if cut at the proper time.

"Cocksfoot-grass grows in few stalks of a tall height, which are coarse, and ineligible for hay; but for pasture the herbage comes early, and affords a good bite from the tufted roots in the spring, and by close stocking the ground, to keep down the coarse stems. The seeds weigh about 12 lbs. per bushel."

This is commonly called orchard-grass, in this country. As observed in the quotation, its stems are rather coarse, which lessens its value for hay. Still from the abundance of long leaves which it throws out, it makes a fodder, which, if cured in the proper stage is well relished by stock. The aftermath is often of more value than the first crop. It seldom sends up seed-stalks after the first crop, but the numerous leaves continue to grow all the season, presenting in autumn a mass of soft herbage. As above remarked, however, its greatest value is for pasture; no grass starts quicker or grows more rapidly after being cut or fad off. It is best adapted to strong, loamy, or slaty soils, where it retains its vigor for many years. From the strength of its roots it is seldom injured by frost, and it is superior to most species in sustaining itself against draught.

"Cat-tail-grass thrives on damp lands and under moist climates, where the produce is very considerable. The stems are coarse, and the growth is not large on a variety of soils; the foliage is not much relished by animals. But it is next to the rye-grass and meadow fescue for general use. Six pounds are sown to an acre,

for hay, and four for pastures and meadows. The seeds weigh about 44 lbs. per bushel."

This is the herds-grass of New England. It is not held in as high estimation in England as it is in this country. The English farmers dislike its coarse stems, for hay, and as a pasture grass, there are many species superior to it, both in this and other countries. Where hay is produced for market in this country, on moist, rich land, it is unquestionably the most profitable species we have, as it yields a large crop and buyers do not object to its coarseness.

CULTURE AND SUPPLY OF FLAX.

While the public prints are teeming with proposed substitutes for cotton, and about the nature, quality, and applicability of which, the greatest ignorance prevails even among practical men, who ought to be much better informed, it seems not an inopportune moment to direct attention once more to the importance of promoting extended supplies of flax. This subject has just been brought very prominently forward by one who is looked up to, and justly so, by men both in and out of the trade, as one of the best informed on all that relates to flax cultivation and the linen manufacture, in an excellent little work* that cannot fail to be referred to, in future, by all desirous of looking into the matter.

With the history of the rise and progress of the linen trade in Ireland, the manufacturing processes, statistics of mills, and foreign tariffs, all fully treated upon by Mr. Charley, we need not trouble our readers. But we shall certainly be doing some service by placing before them a digest of the valuable statistical details, and practical information furnished as to cultivation in Ireland, referring them to the book itself for more full particulars.

In Ireland the amount of flax sown varies as much as 70,000 or 80,000 acres within a few years. For instance, 1857 it was 91,000 acres, and in 1853 fully 175,000 acres. The difference in value within three years being probably £1,000,000. In 1859, the acres were 136,282, and in 1860 only 128,444. When grain brings a high price, the breadth of crop under flax is diminished; while if it remains at a low rate, the farmer is naturally induced to sow more flax-seed. But there is another influence working against an increase of flax cultivation in Ireland, namely, the gradual introduction of the Scotch and English system of tillage farming on a large scale. As farms increase in size, and labour becomes dearer, it is probable that flax will be even less grown. It is essentially the small farmer's crop, sown by himself, and cleaned, pulled, steeped, even scutched by his wife and children, for whom these occupations form a light and agreeable kind of hand labour.

In growing grain crops the farmer has a very

wide competition, and the profit is consequently at a minimum point; in flax he has fewer competitors, and for many years past there has been a brisk demand for fibre. So that with fair success, he makes fully a double profit compared with a grain crop. In France and Belgium they work the ground for flax as carefully as we prepare it for onions, and use every means to have the soil as nearly as possible of universal texture, both as to tilth and the chemical compounds of the land, using such manures as science points out, to neutralize the excess of one ingredient and to supply the deficiency of another, so as to have all the soil of equal quality. In Ireland, on the contrary, in some of the fields we find four or five different kinds of soil, and consequently four or five different qualities of fibre are produced from the same seed sown on even the best-cultivated farms.

A correspondent quoted by Mr. Charley observes: "Unless we improve our land by a better and more scientific system of cultivation, we can never successfully compete with them in the production of fine fibre for the cambric manufacture. Again, many farmers attempt to grow too much flax in one year, and are therefore obliged to sow too often on the same ground. As the result of my observations abroad, as well as of my own experience at home, I would say that flax should come in the course of a long rotation, and only be sown in the same field at an interval of eight or nine years." The growth and after management of flax require considerable skill and experience; but it is a very interesting crop, and Mr. Charley thinks it worthy of more consideration than it has yet received in Great Britain.

The exports of linen fabric from the United Kingdom are about four and a half millions sterling per annum, and the home trade is probably equal; to this must be added the value of yarns exported, nearly two millions, making a total of eleven millions sterling. About two-thirds of this large sum are represented by the Irish linen trade, and the other third by the productions of Scotland and Yorkshire. It is evident a very great quantity of flax is needed for the production of so large an amount of fabrics, and the demand would certainly much increase if more moderate rates prevailed.

Since the early part of the century cotton and other raw material have undergone a gradual reduction in cost, and the price of manufactured goods has been much lowered, so as to place the articles within reach of a larger number of consumers. The price of late, however, has remained very much the same, and though linen goods are certainly cheaper than formerly, almost the entire saving has been effected by introducing improved means of manufacture—a saving of course not peculiar to the linen trade, but equally enjoyed by all others.

Among the continental nations of Europe, the northern has long been celebrated for the

* "Flax and its Products in Ireland,"—by W. Charley, J. P., Bell and Daldy.

production of flax and its manufactures: Flanders being especially distinguished for the beauty of its fine goods, and Russia and Germany for the strength and durability of their heavy and other linens.

The entire of the flax produced in Ireland does not average 30,000 tons a year, while the consumption of flax in our linen manufacture exceeds 100,000. At present, therefore, scarcely one-third of the raw material is grown at home, though great attention has been given to the subject. We should like to see our supply of coarse flax drawn from British India and the colonies instead of Russia, and our medium and fine qualities grown in Ireland instead of Belgium; but we do not anticipate that Indian flax will be a rival of our home production. The cheap labour and fertile soil of the Punjab may produce a fibre that will compete with Russian produce; and if it does so, it will be a great blessing to India and a source of increased prosperity to the linen manufacturers of Ireland and Great Britain. In Russia and the rest of Europe we have no power or influence over the supply of flax, except the offer of tempting prices. In Ireland and India there is a large field open, and Belfast, almost unaided, is honourably striving to increase in both countries the cultivation of this highly useful plant.—*Mark Lane Express.*

Agricultural Intelligence.

DUART FARMERS' CLUB.

EDITOR OF THE 'AGRICULTURIST'.—SIR:—The accompanying Essay was read at a meeting of the Duart Farmers' Club, at whose request it is sent to you for publication in the *Canadian Agriculturist*.

Very respectfully yours,

ARCH'D BLUE,

Duart, February, 1863.

Secretary.

Essay on Draining, (by C. L. Heycroft.)

To remove water from land two kinds of drains have been adopted, the open, and the hollow, or covered drain. Each has its advantages; but generally speaking, the covered drain is preferable. It is true that it entails greater expense in construction, yet if well constructed is cheaper in the end, as it requires no annual outlay for cleaning out. The construction of open drains is pretty generally understood; it may be well to mention however, that in digging an open drain none of the earth taken out should be left at the side of the ditch, but should be spread as far as possible, so as not to impede the passage of water into the drain. The width at the bottom should never be more than one-third of that at the top.

In constructing a covered drain, the cheapest and readiest mode of excavating it is by the plough, alternately turning in and out furrows, and cleaning out with a shovel. The drain may be carried down to the depth of two or more feet by attaching a pole to the plough and letting the team walk on each side of the ditch. It may be finished by the draining spade. The filling up may also be effected in a great measure by the plough, using one horse. The depth of the drain will, of course, vary with the nature of the soil, but it should never be less than two feet. The principle governing the depth, should be that enunciated by an eminent English Agriculturist, at a late Agricultural dinner in Suffolk: "Get at the water wherever it is."

For filling drains we want a substance that will afford a free passage for the water, allow it to enter along the sides, and at the same time resist the superincumbent pressure.—Many different substances have been employed, such as peat, sod, straw, rope, brush, poles, stones, gravel, sawed boards, tiles and pipes. Of these, the tile and pipe are the best. Peat and sod may be used in certain situations, but they are not sufficiently durable to answer a good purpose.

Columella, a Roman agricultural writer, speaking of straw rope as a draining material, says that the drains will continue good for 50 or 60 years. It does not follow that when the straw decays the drain will cease to be of use. In clay, the straw forms an arch, and after the straw has decayed a passage still remains. In this country the material most abundant is wood in its different forms. Let us see how it answers. Lord Petri, an eminent Scotch agriculturist, gives the preference to brushwood over every other material, in soils that are in the least apt to flow. In such soils it is almost impossible to prevent the earth from collecting around the stones, and ever insinuating itself into the joints of the pipe, where it hardens, and effectually prevents the percolation of water. With brush however, the case is different, for a portion of the wood is gradually decaying, thus affording a passage for the water for a much longer period. Willow brush is very durable in drains. Mr. Young, the agriculturist, says that he has seen it 30 years after being placed in the drain, and that it was then in as sound and perfect a state as when first placed there. The brush, however, must be green when used. Gravel answers a very good purpose for filling, and, perhaps, comes nearest of any to the natural drain. The only objection to it is, that the drains would require to be placed closer together than with other substances. As regards lumber, it appears to us that using chestnut boards, 1½ inches thick and 4 inches wide, steeped in petroleum until saturated, then placed triangularly in the drain on a bottom piece, would be the best means of using this material. The cost would be about

eight cents per rod. Stones are an excellent material, when flat stones placed triangularly, or small stones filled in. In using these last it is only necessary to fill from 6 to 8 inches of the bottom of the drain. A material much used in the south of Devonshire is burnt clay. The clay is puddled, with the addition of some sand, and then formed into irregular lumps with the hand. These are placed in a conical pile around fuel, covered with brushwood and straw, plastered over with clay and burnt like charcoal. This forms a very cheap substance, and very durable, especially if the heat is sufficiently durable to vitrify the clay.

There are other modes of draining; (such as the mole-plough, in use on the western prairies) but they are scarcely applicable here. They all consist in forming a pipe through the soil, at a certain depth, but this pipe is only serviceable for a limited time.

The distance at which drains should be cut will vary with the nature of the soil. In the heavy clays of Devonshire, they are cut from 10 feet to a rod apart, or what is termed thorough drained land. In lighter soils they may be a greater distance. In a gravelly subsoil the effect of a drain will extend very far on each side.

In conclusion we may observe, that in draining care must be taken not to have too much fall in any part of the drain, as it increases the liability to choke; and also, that to secure full effect from draining, especially in heavy soils, it should always be followed by subsoiling.

BOKAHARA CLOVER.

The following communication was submitted at a meeting of the Board of Agriculture at Toronto in February.

{ BUREAU OF AGR. & STAT'CS.,
Quebec, Dec. 10th, 1862.

DEAR SIR.—The following extract from a recent letter from our late Emigration Agent in Prussia will explain itself. Without being able to form any opinion as to the qualities of the clover seed sent over by him, the Minister has thought it advisable to divide the quantity between the Boards for each Province, to be dealt with as they may think best.

I am, &c.,

E. CAMPBELL,

Hugh C. Thomson, Esq., Act'g Sec.
Sec. Board of Agr.,
Toronto.

Extract from letter from W. Wagner, late Emigrant Agent to Germany, dated Berlin, Prussia, Nov. 12th, 1862.

"About 8 days ago a young German Agriculturist left Hamburg for Ottawa with the intention of becoming a settler.

"I have entrusted him with a small parcel of seed of 'Bokahara' clover, raised on the field

of experiment of the Royal Society of Acclimatisation for Germany. The 'Bokahara' or 'Melilotus' clover from Bokahara, 'Melilotus alba altissima' is from that part of Asia on the other side of the river Amour.

"The flower is white, and has an agreeable smell. The plant was cut three times during the season, and was in bloom on the 8th of August.

"The plant for green fodder or hay always has to be cut when young, about 2 feet high.

"It produces per acre 17,000 lbs. of green fodder, or 7,400 lbs. of dry hay. This clover will also grow on meagre land.

"These notes were given me by A. Hanniman, Director of the Gardens of the Royal Academy for Agriculture, in Proskarr, Silesia, Prussia.

"Time for sowing, spring."

GUELPH CATTLE FAIR.

The Guelph monthly cattle fair was held on Wednesday last. The day was fine and a large number of buyers were present. There were 367 cattle entered and 17 horses, against 279 cattle and 4 horses at the February fair. Many of the cattle were of excellent quality, and a fair amount of business was done. The average price of beef may be put down at about 3.50 per hundred. Mr. Stag of Brockville bought somewhat largely, and was intending to have done considerably more but was unwilling to give the prices asked. He bought about three car load of cattle averaging over \$40 each, four from Mr. George Murton at \$55 each, and one very superior heifer only 2 years old, weighing about 1550 lbs. Mr. R. Macintosh of Paisley Block sold a steer and cow for \$61, and six hogs at 3.80 per hundred. Mr. Reeves bought 28 cattle at from \$60 to \$90 a yoke, and about fifty at Elora on the previous day. Mr. Dryden of Dumfries bought a yoke of working oxen for \$79, from Mr. Smith of Puslinch. Mr. Walter West bought a steer for \$20; he also bought 7 cattle at Elora. Mr. John West sold three heifers for \$94, three oxen for \$87, and six cattle for \$137. Mr. Tyson sold a cow for \$25; he also bought one from Mr. Peckover of Pilkington for the same amount. Mr. Angus McDonald, of Erin, bought a steer for \$29, from Mr. John McMullin of Erin. Mr. Edward Lemon bought 64 cattle at an average of about \$3.50 per hundred, sinking offal. We understand that Mr. Lemon will have 63 hogs coming in tomorrow, which have been purchased from Mr. Gideon and William Hood, and which average about 360 lbs weight, dressed. Mr. Hood sold Mr. Lemon 4 heifers at \$28 each, and two steers at \$70 for the pair, and also 7 head of cattle to Mr. Head of Galt at \$30 each. Mr. Hood also bought 3 cattle from Mr. Gideon Hood for \$115; 4 from Mr. Thomas Hood for \$120; 2 from Miss Brown, Paisley Block, for \$65; 2 from Mr. John Duffield, Eramosa, for \$62; 1 from

Mr. Coldwell, Scotch Block, for \$31; 1 steer from Mr. Murray, Nassagaweya, for \$32, and 2 steers from Mr. William Cowan, Paisley Block, for \$110. We believe Mr. Hood intends to kill the latter for Easter. Mr. Head of Galt, bought 20 cattle, averaging about \$30 each; 3 of them for Galt and 17 for Montreal. The show of agricultural implements was about as usual.—*Guelph Advertiser, March 6, 1863.*

HAMBURG INTERNATIONAL AGRICULTURAL EXHIBITION.

We learn that Messrs. C. L. Flint, of Boston, Mass., and the Hon. Daniel Needham, of Quincy, Vt., have been appointed to represent their respective State Societies, at the Great International Exhibition at Hamburg this year.

We understand that the passage to delegates will be reduced by the Hamburg steamers to \$80 in coin, and probably return tickets may be had for \$150 out and back.

The Dairy.

THE CANADIAN BUTTER TRADE.

EDITOR OF THE CANADIAN AGRICULTURIST.—*Sir*: The export of butter from the Colony has for several seasons been steadily on the increase, and it is of great importance that an improvement should likewise take place in the "make" and "cure;" as a glance at a London or Liverpool price current will show that it classes very low as compared with other sorts. It is to be feared that the operations of the dairy in Canada are conducted in a very imperfect manner. The curing also is very slovenly and irregular.—There is no need that this should continue the case for even another season, and I would recommend farmers and storekeepers at once to pay strict attention to the make and cure of this article; having last season had ample proof that such can be accomplished. In the present article I purpose to give an outline of the mode of making and curing butter in the dairy districts in Scotland, as also in County Carlow, Ireland.

In the Counties of Ayrshire and Lanarkshire butter is made in two ways, either by churning the whole milk, or merely the cream. The bulk of the fine fresh butter prepared for the Edinburgh and Glasgow markets is made in the former way, and could not easily be surpassed in point of sweetness of flavour. On the other hand, what is made in the Counties of Aberdeen and Banff is almost entirely made from cream, and is nearly all cured. In Carlow it is the custom to make the butter part from cream and whole milk mixed together. As the preparations for churning in each of these are different

it will be necessary to describe them separately.

Butter made from "whole milk" is managed as follows:—The milk, as it comes from the cow, is placed from six to twelve hours to cool, the same as when set aside to cast up cream, but this is merely to let the milk cool; and whenever it is freed from its natural heat, the whole meal of milk is emptied into a vat sufficient to contain the whole. If the vat is a large one, and a second meal of milk has become cold before the former meal has begun to acidify, the second meal may be turned into the same vat as the first. But if the first is even approaching to acidity, the second meal of milk should be put in a vat by itself, to prevent its being soured otherwise than by its own natural cause. A lid or cover is thrown over the vat, and it should be left undisturbed until the milk is not only acidified but formed into a lopper. Whenever it comes to this state it may be churned. However, if the lopper is unbroken it may be kept for even two days, till more is in a proper state for churning.

When churning has commenced, the milk that has not soured and lapped, should not be churned, otherwise the buttermilk will ferment. After the clotted milk has been put into the churn, and agitated a few minutes, to break the lopper, the temperature of the milk in the churn must be raised to 70° or 75°. This is effected by pouring in hot water. While one is pouring in the water another should keep constantly agitating the contents of the churn, and here the proper heat should be ascertained by a thermometer, which should be found in every dairy, and constantly used in this and other operations of the dairy. When the milk is at the proper heat from 2¼ to 2¾ hours is sufficient for churning.

Another mode of making butter is to churn the cream by itself. When this method is followed, the milk, when drawn from the cow, is placed into shallow coolers, either wood or stone-ware, and allowed to stand till the cream rises to the surface. In some dairies it is allowed to stand as long as 48 hours, in others not more than 24 hours; in the former more cream is obtained, by the latter less, but of a superior quality; in certain states of the weather the milk will be greatly injured if allowed to stand too long. The cream is taken off the milk with a skim-spoon, and is put into a vat till as much is collected as may be convenient to churn together. The cream in that state soon acidifies, and the oily matter, with some portion of the milk in the cream, forms into a clotted state over the whey; if it remains long unchurned fermentation commences, mouldiness covers the surface, the mass acquires a rancid taste. To prevent these evils the cream should be well stirred every 12 hours with a stick. In churning cream, the temperature must also be raised to 70° or 75°, the churning should neither be too hurriedly or too slowly performed, and the operation kept up steadily. Two hours is the shortest time it can be done with safety.

In Carlow the milk, as it comes from the cow, is divided, about four imperial pints from each cow are put together and left to stand; of this portion the cream alone is used, the skim milk been kept for domestic purposes. The remainder of the milk, when cold, mixed with the cream of the former portion is strained into coolers holding from three to five gallons each, and left in there to cool; this mixture, when perfectly cool, is put into vessels of a larger size, and this part of the process occupies twelve hours. The milk is then left before churning to thicken, which, in cool weather will be in about three days; but this will depend on the state of the weather, and the milk must not be left too long, otherwise the butter will have a bad taste, and if taken too soon it will not be productive. In some large dairies they have churning twice a day, in others once, while in smaller dairies only every alternate day.

In the west of Scotland, whenever butter is made in the churn, it is removed from the butter-milk, and well washed in at least three or four changes of cold spring water. If the butter is very soft, and the weather hot, it should be allowed to lie for ten minutes or so in the cold water, to harden, before it is much beaten; after this it must be carefully kneaded with the skimming-dish, among the changes of water, till every particle of buttermilk is expelled; after which, and while the butter is yet soft, it ought to be salted.

The quantity of salt for butter intended for keeping several months, as used by the Ayrshire dairymen, is half an ounce of salt mixed with ten drachms of refined sugar and ten drachms of nitre, to every sixteen ounces of fresh butter. The sugar improves the taste, and the nitre gives the butter a better color, while both of them act with the salt in preserving the butter from rancidity. Both the sugar and nitre should, however, be used with great caution, and should not exceed the quantity stated above, otherwise the butter acquires a peculiar disagreeable taste. The whole three ingredients are well mixed together and ground or pounded very fine.

In curing, the salt is minutely mixed, if not, part of the butter is yellow, while the parts that missed the salt will be of a white color, and when thus mixed with white spots it brings an inferior price. But although it is necessary that the salt, &c., be carefully kneaded through the butter, care must be taken not to bake or knead it too much, otherwise it gets into a state like putty, and becomes tough and gluey.

In the north of Scotland, viz., in the Counties of Banff and Aberdeen, where a good deal of butter is cured, it is customary to put in about four per cent of salt, being rather more than what is used by the Ayrshire dairymen; but few of the curers use either sugar or nitre. In Carlow I am not aware of the exact quantity used, but from its taste would suppose about the same as in Ayrshire. Some of the dairymen in Carlow use brine for cleansing the butter when it comes

from the churn, which is thought preferable to bleaching it among fresh water. It would be well for farmers and dairymen both in Scotland and Canada to give the brine a trial, as I am of opinion it may tend to retain the sweet flavour of the butter.

In the North of Scotland the make and cure of butter was conducted in a very slovenly way; however, during the past twenty years there has, happily, been a great improvement, although from the fact of its being all store-packed it it does not come up to the quality of the dairy cured Ayrshire butter. The great recommendation of the Aberdeenshire cure is its uniformity; all of one brand being equal in quality, degree of sattness and finish; thus in selling, seldom more than two or three casks are opened for inspection in a lot of twenty or thirty casks, while all the butter cured over that district of country is gone about much in the same way. There is very little difference in the value of any two cured lots, if made at the same season of the year, seldom more than two or three per cent between the best and worst quality: still the system has its faults, and it may be well to point them out.

Formerly the farmers and small crofters in the north used to allow the butter to lie about in a fresh state for days before they took it to the shop-keeper, in exchange for other goods, and he in turn only cured when convenient for himself. Of late years, however, a great improvement has taken place, most of the larger curers have now spring vans which they send round their districts, and in this way the butter is collected and cured more rapidly than formerly; still it never has, nor can have the light sweet flavor of butter cured in the dairies of Carlow.

It will be necessary now to make a few remarks on the packing and the finish of the butter; the kegs should be of oak, and of a uniform size and shape, quite water-tight. The butter when cured should be carefully packed, leaving no spaces around the sides as is too often the case with Canada butter; the kegs should be well filled up, as close as merely to admit the head into the grooves; after being filled the butter should be made quite smooth on the top with a bone knife made for the purpose; after this a very little fine salt should be sprinkled upon it; then a piece of clean new cotton or linen cloth, cut to the shape of the head of the head of the keg, (and previously well washed through water or brine, to free it from the bleaching powder,) lay the cloth quite wet on the butter, after which a little wet salt should be sprinkled on the cloth, when the keg may be headed up; in this way if the make, cure, and finish has been attended to the casks when opened up for inspection months after, will have a fine fresh appearance.

The great drawback in Canada is the excessive summer heat. I have been informed that it is necessary for the farmers to salt the lumps

as churned, as the butter would not keep till conveyed to the storekeeper; who in turn must have much difficulty in knowing how much more salt to put in, when mixing the different lumps of butter together. Some understanding should be come to between the farmers and storekeepers as to the quantity of salt each shall into the butter, otherwise it will be impossible put ever to turn out a uniformly good article.

That the quality and cure of Canadian butter can be improved there can be no doubt. I have ample proof of this from the fact of an Aberdeenshire* correspondent, now settled in Canada West, sending here store-packed butter, which brought last season as high a price as the best Canadian dairy cured, sent at the same time. The difficulty he has to contend with is the twice salting, which, it is to be hoped in another year, may in part be removed; otherwise his butter is as uniform and as carefully cured as when in Aberdeenshire, and it only requires equal care on the part of the other storekeepers and curers to make this a valuable article of export.

The great point is cleanliness. Extreme attention should be given to the scalding and scouring of the coolers, vats, churns, &c., as without this, however good the management in curing and packing, the butter will have a strong taste, and consequently be of inferior quality.

It is also necessary to keep the cured butter in a cool airy place; the outside of the kegs should be kept dry and clean, as a great deal depends on appearance in getting a price; if the temperature of the store can be kept low by keeping ice in it, all the better.

It is the custom in the North of Scotland to have their name or trade-mark branded on the kegs or stamped on with ink; and when a cure gets into repute with the buyers, it is called a fancy brand, and gets a somewhat higher price, and much of this sort is sold to arrive in a brisk market; the buyer being satisfied it will turn out good.

In conclusion, I would urge all interested in the article to do their utmost to raise the quality of the butter produced in the Province.

Leith, Scotland, 4th Feb., 1863. M.N.L.

The Apiary.

ITALIAN HONEY-BEES.

EDITORS OF THE CULTIVATOR:—In answer to the numerous inquiries pertaining to this species of bee, allow me through the columns of your paper, to give a description of them.

When they were first introduced into this country, I regarded them as more of a *humbug* than an improved species of honey-bee, and no doubt others have come to the same

conclusion. But after due consideration and experience for the past three years, I have become convinced of their superiority over the common bee. They seem to be very hardy, will stand the cold of our northern winters better, collect honey much faster, work earlier in the morning and later at night than the common kind. The queens are more prolific, and will breed much faster than the common species. They will collect honey from some species of flowers which other bees pass by. Their proboscis* seems to be longer, and being stronger and more active, they will frequently tear the flowers open to obtain the sweets, which the common bee will *never* do, and as has been frequently alleged, will collect honey from the smaller kinds of red clover. Their size is governed by the size of the cells where they are reared. If comb of other bees' make is used, they will be about the same size as our common bees. But if they are allowed to build their own brood comb, they will be considerably larger.

It has been frequently asserted, that the Italians have no weapon of defence. This is an error, as I learned in the early part of my experiments. I then thought they had instruments of warfare of unusual length. By careful management, I find they are much less liable to sting than the old kind. Bee-keepers who are not thoroughly acquainted with the nature of bees, would do well to use a *fumigation pipe*, which will render any swarm perfectly manageable in less than ten seconds. They can even be shaken out of the hive, and not a bee will resent it.

They differ very materially in color as well as in the shape of their body, from the common kind.—Their bodies seem to be somewhat longer, and taper to near a point. The workers are all marked by a series of gold bands, encircling their bodies just under the wings. The drones are not so strongly marked. The workers resemble the common yellow wasp quite as much as they do the common kind of bees. The queens vary in color; some of them are a dark brown, others are quite light, approaching to near a gold color; but the progeny of a dark queen bear the marks quite as plainly as a light-colored one.

In regard to their *moral* habits, I cannot speak very favorably, unless it is for the robbery of our common stocks. In that capacity, they will excel anything I have ever seen. Being very smart and active, they will make their way into any common hive and get a load of honey and make their escape unharmed. They will have a full hive whether it is a good honey season or not, and I have frequently had them fill two hives, by placing one on top of the other.

I would advise all persons who engage in their culture, to make the entrance of the hive containing the common species very small,

* The store-keeper above referred to is George Clark, Troy, near Dundas.

to prevent being robbed by them. The entrance of the Italian swarms should also be contracted, to prevent their robbing neighboring apiaries. The Italians are not so liable to rob their own species.

K. P. KIDDER
Burlington, Vt.

Horticulture.

TORONTO GARDENERS' IMPROVEMENT SOCIETY.

The monthly meeting of this Society was held in the Agricultural Hall, on the evening of Feb. 16th. Present—Messrs. J. Fleming, (Chairman); C. Young, E. Townsend, S. Ashby, G. Vair, C. W. Lawton, J. Gray, J. Maughan, R. McNish, Higgins and J. Forsyth, Secretary.

Mr. Vair exhibited some Floral specimens from the Conservatory of D. McPherson, Esq. Among them were *Azaleas obtusa*, *marginata*, and *Louis Napoleon*, which called out some remarks upon their respective merits. Also a flower of the *Meyenia recta*, a beautiful and much admired Mexican shrub.

The subjects discussed were the cultivation of the *Camellia*, and the best system of growing Mushrooms.

Mr. Vair read a paper upon the culture and management of the *Camellia*. He said it is a plant unsurpassed for conservatory or greenhouse decoration, and justly holds a place in every collection of greenhouse plants. It has been cultivated in Europe for the last hundred and seventy years, and its varieties now amount to hundreds. Its beautiful form of flower, its endless shades of colour, and ever verdant foliage, render it an object of attraction at all seasons—lacking but the perfume of the *Rose* to constitute it the queen of flowers. The *Camellia* may be raised from seed or propagated by cutting. Some of the single or semi-double varieties seed freely, and with a little attention during the blooming season to the distribution of pollen, some interesting experiments may be made, and many new and it may be valuable varieties obtained. Many of the dwarfer sorts may also be improved by grafting upon stocks of a stronger and more robust habit. As to the best soil for *Camellia* culture, he would recommend a good, clean, yellow loam, with one-third peat. The soil must be free from all deleterious substances, such as chips, thick roots, &c., as they only tend to produce fungi or something else equally injurious. He believed a mixture of peat to be very beneficial, but would prefer growing them in loam altogether rather than use the swamp muck found in the neighbourhood of Toronto, which is often tried as a substitute for peat.

Good drainage he considered a very important point in the cultivation of the *Camellia*—giving

an idea which he thought, if carried out, would be found of some advantage, that is, to have a flower pot constructed with a double bottom, the inside part to resemble the bottom of a propagating pan and perforated in the same way, through which every drop of water might percolate into a small chamber between the bottoms and pass off in the usual way. Although they like plenty of water, it is necessary that it should pass quickly off. He believed stagnant water about the roots, or improper drainage, to be the principal cause of the yellow sickly looking foliage sometimes to be seen. In such a state they are particularly liable to be scorched with the sun. He would recommend a careful examination of the roots and drainage when the blooming season is over, let them be well and regularly supplied with water, in a temperature of 60 to 65° and they will make a good growth. He would use the syringe freely upon growing *Camellias* both night and morning in clear weather, but it ought not to be applied with too much force, as it may injure the young and tender leaves. Plenty of air is also very essential to the growing *Camellia*; they will do well outside during the summer, in a situation where they may be shaded from the mid-day sun. A pretty free exposure in September will have a tendency to ripen the wood well, and may prevent the falling of many buds as well as the discolouring and unnatural enlargement of others. When brought inside in the fall they require all the air that the weather will permit; much fire heat he considered injurious, although he did not think it advisable to let the temperature be under 40°. The *Camellia* may be trained to almost any form to suit the taste of the cultivator, and if managed successfully cannot fail to command the admiration of all.

Mr. Turner recommended putting the *Camellia* out in summer; a house made of lattice work, constructed in a convenient and well chosen place, would suit the purpose well. As regards soil, he had used successfully a surfy loam, and watered occasionally with manure water. He thought the best time for re-potting would be in spring, when the buds are swelling.

Mr. J. Gray, who has had much practical experience in Horticulture and one of the earliest *Camellia* growers in Toronto, could endorse much that had been said, but thought that the *Camellia* might be re-potted in the early part of September with as much success as in the spring; with regard to the temperature, in the winter months he had seen it as low as 32° without any perceptible injury to the plants. When removed to the outside he thought it important that the pots should be plunged, as the action of the sun upon the pots or a drying atmosphere will have an injurious effect upon the roots. No plant will stand pruning better than the *Camellia*; by a

judicious use of the knife, badly formed plants may be much improved.

Mr. C. Young was in favour of growing the *Camellia* in partly burned (or what is commonly called charred) soil, with $\frac{1}{2}$ rough sand, stating that some of the best specimen plants he had seen in England were grown in this composition. In putting the *Camellia* outside in summer it is necessary to avoid a situation where they would be exposed to the drops of trees. The growing temperature ought not to be under 60°. He would use the syringe freely and water regularly. The principal cause of buds falling he believed to be neglect of water at some previous period. Manure water may be used to some extent at any season.

CULTIVATION OF THE MUSHROOM.

Mr. Ashby in introducing the subject said, to raise Mushrooms, it is first necessary to procure the proper material. He would collect a quantity of horse droppings from the stable, as free of straw as possible; he thought a small mixture of cow manure very beneficial, and if sheep manure can be obtained all the better. The whole should be kept dry and sunned frequently until thoroughly incorporated and well tempered, when the bed may be commenced in some suitable place. In the summer season an old shade or barn would suit the purpose very well. To form the bed two parallel boards may be stood on edge, 3 feet apart and of any length required; the prepared material to fill the space between the boards to the depth of 15 inches, patted nicely and equally together and covered with 3 or 4 inches of light rich earth. When the heat of the bed has become regular the Mushroom spawn may be inserted in small lumps equally over the soil and covered with hay or straw. The bed may be kept moderately moist by sprinkling with water when necessary.

Mr. Gray said that good Mushrooms may be raised without using spawn, by collecting a sufficient quantity of as pure horse droppings as possible and preparing it in the usual way. The bed may be formed 3 feet wide and of any length, according to the quantity of material or the demand for Mushrooms. A layer of droppings about 9 inches deep is first deposited and covered with loamy earth to the depth of 3 inches; then another layer of droppings of the same thickness covered like the former, each layer narrower as it advances in height. When finished it will be in the form of a ridge and should be covered with a coating of hay or straw. The advantage of such a bed is that it will continue to bear for a long time. If a suitable cellar can be devoted to the purpose Mushrooms may be had all the year through; he (Mr. Gray) had raised good Mushrooms in this way, and had recommended the system to others, who had been equally successful.

Mr. Maughan remarked that to grow Mush-

rooms well, and have a continued succession, it would be necessary to have a properly arranged erection for the purpose. The house should be made with a dark roof, and the light admitted by small windows with wooden shutters, that could be opened or closed as occasion required, the sides to be fitted up with deep shelves one above another of sufficient size to contain the bed. As a uniform temperature is very essential, a brick flue may be constructed to run along the centre of the house; he would recommend a temperature of about 55°. In this way successional beds may be made and Mushrooms had at any season.

It was agreed that the subject to be discussed at next meeting should be the cultivation of Grapes under glass, and the management of hybrid perpetual Roses.

After which the meeting adjourned.

Meeting on March 16th, 1863.

Present, Messrs. J. Fleming, J. Gray, C. Young, S. Ashby, E. Townsend, S. Turner, J. Maughan, C. W. Lawton, G. Vair, E. Louis, G. Leslie, Wm. Greenwood, Pouty, Higgins, and Venn.

Mr. Young exhibited some seedling *Cinerarias* worthy of notice, also some cut flowers of a select variety of *Azaleas*, and a specimen of the beautiful *Orchid-Phælanopsis Grandiflora*, which attracted some attention.

The subject discussed was the cultivation of Grapes under Glass.

Mr. Ashby in introducing the subject said:—Previous to planting it would be necessary to form a border of proper composition for them. To do so, he would excavate to a depth of three and a half feet, and put in the bottom a quantity of stones, brick-bats, or other material proper for drainage, to a depth of six inches, then procure from the pasture field a rich turfy loam, laying the grass side of the top spit down upon the drainage, adding to the lower part of the border a quantity of unbroken bones, in the upper part, or near the surface, an equal quantity of small or crushed bones.

After planting, keep the house warm and moist by frequent syringing. Under favorable circumstances they may be expected to make 12 or 14 feet of wood the first season. The cultivator will have to decide the mode of pruning to be adopted, he believed the cane system to be a good one, as clean, healthy wood, can generally be had by that method. He would syringe at night only, and admit air early in the day before the house gets too warm. It is necessary to cease syringing at the blooming season, as the fruit will set better in a rather dry atmosphere, after which it may be resumed freely until the berries begin to colour.

Thinning the berries and bunches is an important operation; they may generally be reduced about two-thirds, and should be done in a regular equalizing manner.

Mr. Young in making some remarks upon the question, said, that three and a half feet of

depth of border is unnecessary, he believed two and a half feet quite sufficient; the most active and healthy roots are invariably found near the surface. He did not think an outside border necessary; by having the roots entirely under control inside, stimulants may be applied with greater success. Good drainage he considered very essential under any circumstances.

Mr. Lawton thought a shallow border preferable, and recommended a mixture of charcoal in its composition. The first year after planting he would cut them well back, leaving only four or five eyes, and not allow them to fruit the second season. The third year six or seven bunches may be obtained, and the fourth year ten or twelve bunches, according to the strength of the vine. He did not think that any of the Muscat varieties are suitable for a cold Grapery.

Mr. Gray spoke at some length upon the subject, recommending the system of propagating from eyes, and planting out immediately, in this way he had fruited the vine well in thirty months from the time of striking the eye, and believed it to be the most successful method that can be adopted. He agreed with former speakers that deep borders are unnecessary, and that shallow well prepared borders, produce the finest and best flavoured fruit. At the time of starting the vine, by removing all superfluous buds, the remaining ones will break stronger and more regular.

Mr. Pouty asked the meeting if the vine is improved by root grafting, whether it will produce better wood or fruit? He believed that it was preferable to eyes, especially for pot culture.

Mr. Young said, that he thought it a benefit to weak growing varieties only.

The meeting then adjourned.

The subject to be resumed at next monthly meeting.

JAMES FORSYTH, Sec.

CULTIVATION OF THE PEAR.

The following communication was referred to in the report of the meeting of the Board of Agriculture, in our last number.

TO THE BOARD OF AGRICULTURE OF UPPER CANADA.—*Gentlemen*,—Believing that the capabilities of our Province as a fruit growing country have been as yet but very partially developed, and being desirous of doing something towards the ascertaining of those capabilities and the encouragement of fruit raising, I hereby propose to you to give the following premiums, viz.:

To any person, not a professional nurseryman, residing within the county of Ontario, or Durham, Victoria, Northumberland, Peterborough, Prince Edward, Hastings, Lennox, Addington, Frontenac, Leeds, Lanark, Grenville, Dundas, or Stormont, who shall exhibit the largest collection of really valuable pears, not more than six specimens of each variety,

nor less than three varieties in each collection, each variety named, and shall with the entry make the written statement required below; a premium of *thirty-five pear trees* of suitable size for planting, grown either upon the pear or quince stock, at the option of the exhibitor, and of such kinds as the exhibitor may select from the list of pear trees cultivated at these nurseries.

To the exhibitor of the second best collection, upon the same conditions, a premium of *fifteen pear trees*, with like privilege of choice to exhibitor.

To the exhibitor of the third best collection, upon the same conditions and with the same privileges, a premium of *five pear trees*.

Each exhibitor to send with his entry a written statement, shewing the township, lot and concession where the fruit exhibited by him was grown; the nature of the soil; the stock, whether pear or quince; the hardihood of each variety and probable ability to endure the climate of his locality, and which of the varieties the exhibitor values most highly; such statement to be signed by the exhibitor, giving also his post office address.

The collections to be exhibited at the Provincial Fair, to be held in 1863, subject to the rules and regulations of the Agricultural Association, such entries to be distinct from all other entries. The Board of Agriculture to appoint two of the judges to decide upon the merits of these several entries, the third judge to be subject to my appointment.

The same premiums for like collections to be exhibited in 1864, by residents in the counties of Lambton, Huron, Bruce, Grey, Simcoe, Perth and Wellington, subject to same regulations.

Permit me to submit the above for your consideration.

C. BEADLE.

St. Catharines Nurseries, Nov. 12th, 1862.

LIST OF FRUITS RECOMMENDED BY THE FRUIT GROWERS' ASSOCIATION.

St. Catharines, March 2, 1863.

Editor Canadian Agriculturist.

DEAR SIR,—At the last meeting of the Fruit Growers' Association of Upper Canada, I was directed to transmit to you a complete list of the several fruits passed upon by the Society, and shewing for what they had been recommended.

Below you will find the entire list arranged under appropriate headings.

Yours truly,

D. W. BEADLE,

Secretary.

Apples recommended for general cultivation.

1. Duchess of Oldenburgh. 2. Early Joe, as a dwarf for Gardens. 3. Early Harvest. 4.

Esopus Spitzenburg. 5. Fameuse or Snow apple. 6. Fall Pippin. 7. Golden Sweet. 8. Gravenstein. 9. Golden Russet. 10. Hawthornden. 11. Keswic Codlin. 12. Northern Spy. 13. Pomme Grise. 14. Rambo. 15. Red Astracan. 16. Ribston Pippin. 17. Roxbury Russet. 18. St. Lawrence. 19. Talman Sweet.

Apples recommended for cultivation in particular localities.

1. Baldwin, South of Lake Ontario and the G. W. Railway. 2. Rhode Island Greening, in the vicinity of the lakes.

Recommended for further trial.

1. Benoni. 2. Belmont. 3. Beauty of Kent. 4. Colvert. 5. Dominic. 6. Fall Janetting. 7. Jersey Sweet. 8. Porter. 9. Pimate. 10. Sweet Bough. 11. Summer Rose. 12. Swaar. 13. Twenty ounce apple. 14. Wagner. 15. Westfield Seek-no-further.

Pears, recommended for general cultivation.

1. Belle Lucrative. 2. Flemish Beauty. 3. Louise Bonne de Jersey. 4. Madeline. 5. Seckel. 6. Tyson. 7. White Doyenne.

Recommended for cultivation South of Lake Ontario and G. W. Railway.

1. Bartlett.

Recommended for further trial.

1. Beurre Giffard. 2. Beurre d'Arjou. 3. Duchesse d'Angouleme. 4. Osbands' Summer.

Cherries, recommended for general cultivation.

1. Mayduke.

Recommended for cultivation South of Lake Ontario and G. W. Railway.

1. Black Tartarian. 2. Black Eagle. 3. Bigarreau or Yellow Spanish. 4. Elton, also for trial further north. 5. Early Purple. 6. Elkhorn or Tradescants' Black Heart. 7. Governor Wood. 8. Napoleon Bigarreau.

Recommended for further trial.

1. American Heart. 2. Knights' Early Black. 3. Late Duke. 4. Monstreuse de Mezel. 5. Queen Hortense.

Plums recommended for general cultivation.

1. Coe's Golden Drop. 2. Green Gage. 3. Imperial Gages. 4. Lombard. 5. Lawrence's Favorite. 6. Prince's Yellow Gage. 7. Reine Claude de Beval. 8. Smith's Orans. 9. Washington. 10. Yellow Egg.

Recommended for further trial.

1. Jefferson. 2. Sharpe's Emperor.

Currants, recommended for general cultivation.

1. Black English. 2. Black Naples. 3. Cherry. 4. Red Dutch. 5. Victoria. 6. White Grape. 7. Whit Dutch.

Recommended for further trial.

1. Ogden's Black Grape. 2. Prince Albert. 3. Red Russian.

Gooseberries recommended for general cultivation, English varieties.

1. Crownbob. 2. Sulphur Yellow. 3. Warrington Red. 4. Whitesmith.

American Varieties.

1. Houghton Seedling, not being as subject to mildew as the English varieties.

Strawberries, recommended for general cultivation.

1. Burr's New Pine. 2. Jenny Lind. 3. Wilson,—for market.

Recommended for further trial.

1. Hooker. 2. Monroe Scarlet. 3. Trollope's Victoria. 4. Triumph de Gand.

Raspberries, recommended for general cultivation.

1. Frarconia. 2. White Antwerp.

Recommended for further trial.

1. Brinckle's Orange. 2. Belle de Fontenay. 3. Fastolf. 4. Knevet's Giant.

Grapes.—No variety has yet been recommended for general cultivation in all parts of the Province.

Recommended for cultivation north of Lake Ontario and the G. W. Railway.

1. Clinton.

At the meeting held in Toronto on the 12th November, 1862, the members present prepared each a list of the varieties that he had found the best. On examining them it was found that the Delaware was on every list, Concord on all but one—Diana, on all but two—Hartford Prolific, on all but three—Rebecca, on all but three—Ontario, on all but four—Isabella, on all but five.

THE DWARF APPLE TREE QUESTION.

EDITOR OF THE AGRICULTURIST.—It is not my intention at this time, to attempt to reply to Mr. Werden's last article on the above-named subject, for the following reasons.

1st. Because I am of opinion that all such discussions, when written for a periodical like the *Agriculturist*, should be ended in the same volume in which they are begun.

2nd. Because I am unable to perceive in Mr. Werden's last, one idea on the subject that was not replied to in my last.

3rd. Because it is best for all parties concerned, that the discussion should stop, when such a discussion cannot be carried on, without disputants calling in question each others' veracity. Now Sir, I assured Mr. Werden in the September number of last year, that my Dwarf Apple Trees get "ordinary cultivation, or such as other trees and bushes generally get, in the gardens of our

thrifty farmers or mechanics," and yet Mr. Werden reiterates, that he "hinted in his last article how Dwarf trees might be made," viz., "cramp their roots in a pot," and then says, "which no doubt is the cause of Mr. Arnold's trees bearing." Now Sir, I shall positively refuse to reply to anything that Mr. Werden may write; but, Mr. Editor, if you will please to refer to the articles on the Dwarf Apple Tree question in last year's *Agriculturist*, and shall express yourself of the opinion, that there are points in Mr. Werden's *first article* that have not been fully answered, then, I will take pleasure in replying to that portion to the best of my ability. There are several points in Mr. Werden's last, that to your new subscribers, would seem to demand a reply, but for the reasons assigned above for not doing so, and also not wishing to inflict a punishment upon last year's subscribers, I shall try and refrain from giving, and conclude with one word about my refusing to supply Mr. Werden with 25 Dwarf Apple trees; he says, "send along your trees, and if I don't make fine large trees of them, then I will pay the bill." When, Mr. Werden? Ten or twelve years is too long for me to wait. But why not accept my proposal, to put the trees in the hands of disinterested parties in order that they may be tested fairly. If Mr. Werden sends along his order accompanied with the cash, the trees will be sent; and allow me to say to Mr. Werden, that everything sent out from this establishment, is warranted to be what it is called. But, lest Mr. Werden should accuse me, as he has done others, of "writing this for the purpose of selling my trees," I will, as soon as spring opens, send him half a dozen Dwarf Apple trees *gratis*, (2 year-old.) *warranted genuine, and to live, and defy Mr. Werden to make them grow like common Apple Trees, under the same cultivation, unless he plants the Dwarf so deep, as to cause them to throw out roots upon the graft, as well as upon the stock.*

Your's,

CHARLES ARNOLD.

Paris, March 23rd, 1863.

Veterinary Department.

AGRICULTURAL AND VETERINARY CLASS.

It must be already known to most of our readers that for some time past the Board of Agriculture has been making exertions to bring a systematic course of Veterinary instruction within the reach of young men engaged in agricultural pursuits. Accordingly a small class was formed for this object in the winter of 1861-2, the result of which was sufficiently successful to justify a further trial. Another class

was therefore commenced in January last, comprising upwards of thirty young men from different parts of the Province, who attended three or four lectures daily on subjects relating to Agriculture, the anatomy, physiology, and diseases of the horse and ox, and the sciences which bear on these pursuits. Mr. Andrew Smith conducted the Veterinary department, assisted by Mr. Eachran, a licentiate of the London and Edinburgh Veterinary Colleges, who has recently come to this country and intends to commence the practice of his profession at Woodstock. Professor Buckland gave daily lectures on the science and practice of Agriculture, and was assisted in Chemistry, Geology, Natural History, and Meteorology, by Professors Croft, Chapman, Hincks, and Kingston, of University College. The main object of the course was to awaken rather than to satisfy curiosity; to prepare the minds of the pupils for some extensive and systematic study, and to instruct them how to read, investigate, and observe *for themselves*. Many of the students made considerable progress in dissecting the horse, and evinced a more enlarged and accurate knowledge of the anatomy and physiology of that useful animal than could have been expected in so short a time.

Although no examination either on entering or leaving the class was imposed as a necessary condition, the Board of Agriculture with a view of encouraging emulation, offered four prizes to the four students who should pass the best examinations in all the subjects, agreeably to that order; the value of the prizes to be given in suitable books. Accordingly at the end of the course, the beginning of March, eight students presented themselves, and after two days examination conducted by written questions and answers, the following results were obtained:—1st Prize, value \$20, David McCrae, Guelph; 2nd Prize, value \$15, John Weir, Wentworth; 3rd Prize, value \$10, John Brown, Binbrook; 4th Prize, value \$5, James Dunlop, Woodstock. The questions were so framed as to test not only comparative but absolute merit; and the answering, on the whole, was highly satisfactory. Both Professor Buckland and Mr. Smith complimented the class for the industry and application they had evinced, and encouraged them to follow their studies in a similar spirit at home. At the conclusion of the proceedings, the members of the class presented Professor Buckland with a very handsome walking-cane, and Mr. Smith with an elegant riding-whip, as an expression of their goodwill and appreciation of those gentlemen's services.

HOW TO PUT HORSES IN CONDITION.

From the North British Agriculturist.

By proper feeding, exercise, and grooming, is this important end to be attained. There is and can be no patent or rapid process. Time and good management are equally requisite. The plan pursued must be identical with that followed in the training of those athleteæ who are to perform feats of strength or agility. He who would enter the ring with a Tom Sayers, or try a few miles with Deerfoot, must live for months on light and digestible but concentrated and nutritive fare; by constant and appropriate exertion must keep his body and limbs firm, light, and active; by friction and baths preserve in all their integrity the important purifying functions of the skin, and by reasonable sleep and rest recruit the powers of life. Under such training, with avoidance alike of stimulants and depressing agencies, great activity and vigour are obtained; and it is also noteworthy that such a system of self-denial is favourable to the development of the mental as well as the physical powers. Dr. John Brown, the author of the inimitable "Rab and his Friends," aptly says in his excellent papers upon "Health" that "there is a religion of the body as well as, and greatly helpful of, the religion of the soul." And in the busy pushing population, especially of large towns, this is too often lost sight of. The denizen of the city cannot spare the time or exercise the self-denial necessary to attain such condition as would enable him to thrash a professional boxer, ride for the Liverpool Steeplechase, or bend the stroke oar at a crack Oxford boating match; but by walking, drill, cricket, or any other rational exercise he may invigorate his limbs, expand his chest, enjoy a sound digestion, avoid "attacks of the stomach, liver or nerves," and render his life not only longer, but happier and more useful.

But our province is with the health of animals, and not of their masters, and our horse waits our attention. The groom is anxious to know what physic he is to have and stares with a half-contemptuous smile if you attempt to insinuate the possibility of dispensing with it. But one dose by no means satisfies the ideas of such functionaries. There is the approved and orthodox number, the first to stir up the humors, the second to set them afloat, and the third to clear them off, which it sometime does, and the horse as well, as Professor Dick in his lectures was wont facetiously to remark. But seriously speaking, we cannot discover any advantage in giving physic to any healthy horse. It only evacuates the bowels, and purges the system of a quantity of useless fluid matters which might be more naturally and safely got rid of through the skin. It may nauseate and weaken, but it cannot strengthen and invigorate. No sensible trainer, whose man is healthy and living under a sound regi-

men, drugs with salts and senna, rhubarb or colocynth; and with the horse which is in every respect so much more under control, and is, moreover, a total abstainer, the drugging is still less necessary.

But whilst physic is useless, and even hurtful for a healthy horse, there are certain circumstances in which it becomes serviceable. Young animals fresh from a dealer's stable or from grass, sometimes thrive too well, feed if permitted too greedily, and thus disorder their stomach and bowels. The skin sympathises, as it ever does, with the irritable state of the intestinal mucous membrane, is dry, rough, and itchy, and in such cases a simple laxative, followed up by an occasional dose of salt or nitre will prove useful. Sometimes the change from soft laxative fare to dry heating food is made too suddenly or rapidly, and an unthrifty state of the skin and constipation of the bowels are the result. In such cases, besides a more laxative diet, a small dose of aloes will be useful. Again, if a horse in fair condition becomes from lameness, accident, or any such cause unable to take his usual exercise, and is to be confined for several days to his box or stable, it is usually advisable to give him, with a few mashes, a small dose of medicine which will prevent his legs swelling, and counteract any febrile or inflammatory tendency.

In spring and autumn, whilst the coat is being shed, horses are notoriously weak and difficult to keep in condition; and at such times the old-fashioned remedy is the favourite physic, often repeated at intervals, for several weeks. This obviously can only make matters worse. The horse wants something put into instead of taken out of him; and the sensible man will instead, at such times pay special attention to the stable comforts, will lighten the work—especially for young growing horses—will insure the goodness and soundness of the oats and hay, introduce besides a little variety into the dietary. In these and many other cases where horses are weak and wanting in life and endurance, instead of flying absurdly to the physic or alterative balls, give daily a quart of old white peas. They are palatable, digestible, and nutritive. Linseed cake is another article of much value, especially for young horses. No other food produces so smooth, silky, and glossy a coat. A pound every second day will suffice, appearing to act both on the bowels and skin, and helping to counteract any unduly constipative effect of the dry oats and hay. A little well-boiled flax seed or boiled barley acts much in the same way. In various stables some of the patent and medicated foods now so largely advertised are employed, and although not devoid of utility, their useful results can usually be more economically obtained by the sensible selection and judicious varying of the ordinary articles of food already mentioned. Many horses between the ages of four and five fail to do their work satisfactorily owing to the

swelled and painful state of the gums, especially of the upper jaw. Eating in consequence becomes difficult and painful. This state of matters is known as *lampas*, and is nothing more than the fulness and tenderness of the gums accompanying in all animals the eruption of the teeth. The simple malady is, however, frequently considered as an abnormal growth, and the enlarged palate is cruelly torn away, or rudely burnt with a hot iron. The appropriate treatment is to bruise the animal's oats, give it for a time soft and easily masticated food, and relieve the swelling and tenderness by lancing the gums.

Parasitic Dyspnœa or Wheeze in Cattle.

SIR—Through the columns of your influential journal, I beg to offer the following few remarks on a subject that might probably be viewed with interest—dyspnœa or wheeze in cattle—by those who may be more immediately concerned, and to this end I would advance that all young animals are the subjects of parasites to a greater or lesser extent, the nature and amount of disease produced by them varying according to their location, habits, and number; for example, the *Cœnurus cerecralis* of the sheep, by reason of its situation, while producing staggers, causes infinitely more disturbance than the *Æstrus evui*, or bot, inhabiting the cuticular portion of the horse's stomach; the *Distoma hepaticum*, or liver fluke, in consequence both of its situation and numbers, does more harm than the *Hydatidæ cellulosa* inhabiting the cellular tissues of muscles, which create in pigs the disease called measles. The entozoon *Filaria branchialis*, so called from its thread-like appearance and habitat, the bronchial tubes, especially of young cattle, generates in them the disease bearing the appellations of "Parasitic dyspnœa, wheeze, or husk."

The bronchial filaria are chiefly *oviparous*, that is, egg-producing, in contradistinction to the *viviparous*, which bring forth their young alive; they are of distinctive genders; the females seek the remotest portions of the air passages to deposit their eggs, which they do in vast numbers. The males, even when fully grown, are less numerous than the females, and the latter present the ova-ducts about the centre of their bodies; the mouth in both cases is alike. A description of the changes wrought in the egg during its development into the young though perfect filaria, would, no doubt, be uninteresting to the non-theoretical, and, therefore, shall be passed over unnoticed. The ova deposited develop into living entozoa, which in their turn, generate likewise, and so on, *ad infinitum*, thereby accounting for the multitude found on a *post mortem* examination of the diseased ani-

mal, and the general emaciation and difficulty of breathing observable during life.

This disease in the ox tribe is almost entirely connexed to animals under the ages of eighteen months, at which time the system seems favorable to the vitality and development of the ova. No doubt, the germs of these parasites reach the system of the aged, because both young and old are placed under the same circumstances, the former becoming the subjects of the disease, whilst the latter entirely escape by reason of their non-susceptibility to nourish and favor the growth of the ova. Occasional cases, do occur, however, in the old animal, when debilitated from any cause, such as privation, exposure to inclement weather, or protracted disease.

This affection is mostly prevalent on soils badly drained, naturally retentive of moisture, or after a hot, dry summer, the latter being antagonistic to the generation of most parasitic diseases.

Out of many theories accounting for the spread of the malady, the following is probably the most correct. The *Filaria* gives rise to a countless number of eggs lodged in the mucus (which they themselves by their irritation produce) of the bronchial tubes, the animal coughs frequently, and discharges a large quantity of this mucus (which by the microscope may be demonstrated to contain thousands of eggs) upon the surrounding herbage. Another beast whilst feeding deglutates a portion of food upon which the mucus so impregnated fell; and as the application of a little heat (such as is afforded them by the mouth) is sufficient to liberate the young worm from its protecting envelope, there is no reason why some left on the back of the mouth and fauces may not at once seek their proper habitat. This explanation seems true when we remember that two of these entozoa, male and female, in consequence of their immense propagating powers, will be sufficient, having entered the bronchial tubes, to lay the foundation for a future attack of this disease.

It is impossible to err in diagnosing the affection, the symptoms are so characteristic.

A wheezing cough, discharge of mucus from the mouth, rattling noise whilst breathing, heard plainly on auscultation, respiration hurried, with emaciation proportionate to the previous duration of the malady, all point to its pathology.

In treatment, the object should be two-fold: firstly, support the strength of the patients; secondly, if possible dislodge the entozoa.

They should be provided with nitrogenous food, and protected from the debilitating influence of inclement weather; tonics, vegetable or mineral, may be administered; gentian and sulphate of iron are perhaps the best.

—*Veterinarian.*

Domestic.

Pea Soup (inexpensive.)

INGREDIENTS.— $\frac{1}{4}$ lb. of onions, $\frac{1}{4}$ lb. of carrots, 2 oz. of celery, $\frac{1}{4}$ lb. of split peas, a little mint shred fine, 1 tablespoonful of coarse brown sugar, salt and pepper to taste, 4 quarts of water, or liquor in which a joint of meat has been boiled.

Mode.—Fry the vegetables for 10 minutes in a little butter or dripping, previously cutting them up in small pieces; pour the water on them, and when boiling, add the peas, which should have been soaked overnight, as in the preceding recipe. Let them simmer for nearly 3 hours, or until the peas are thoroughly done. Add the sugar, seasoning, and mint; boil for $\frac{1}{2}$ of an hour, and serve.

Time $3\frac{1}{2}$ hours. Average cost, 1 $\frac{1}{2}$ d. per quart. Seasonable in winter. Sufficient for 10 persons.

Potato Soup.

INGREDIENTS.—4 lbs. of mealy potatoes boiled or steamed very dry, pepper and salt to taste, 2 quarts of medium stock.

Mode. When the potatoes are boiled, mash them smoothly with a fork, that no lumps remain, and gradually put them to the boiling stock; pass it through a sieve, season, and simmer for 5 minutes. Skim well, and serve with fried bread.

Time, $\frac{1}{2}$ hour. Average cost, 10d per quart. Seasonable from September to March. Sufficient for 8 persons.

Potage Printanier, or Spring Soup.

INGREDIENTS.— $\frac{1}{2}$ a pint of green peas if in season, a little chervil, 2 shredded lettuces, 2 onions, a very small bunch of parsley, 2 oz. of butter, the yolks of 3 eggs, 1 pint of water, seasoning to taste, 2 quarts of medium stock

Mode.—Put in a very clean stewpan the chervil, lettuces, onions, parsley, and butter, to 1 pint of water, and let them simmer till tender. Season with salt and pepper; when done, strain off the vegetable, and put two-thirds of the liquor they were boiled in to the stock. Beat up the yolks of the eggs with the other third, give it a toss over the fire, and at the moment of serving, add this, with the vegetables which have been strained off, to the soup.

Time, $\frac{3}{4}$ of an hour. Average cost, 1s. per quart. Seasonable from May to October. Sufficient for 8 persons.

Useful Soup for Benevolent purposes.

INGREDIENTS.—An ox-cheek, any pieces of trimmings of beef, which may be bought very cheaply (say 4 lbs.), a few bones, any pot-liquor the larder may furnish, $\frac{1}{4}$ peck of onions, 6 leeks, a large bunch of herbs, $\frac{1}{4}$ lb. of celery (the outside pieces, or green tops, do very well), $\frac{1}{4}$ lb. of carrots, $\frac{1}{4}$ lb. of turnips, $\frac{1}{4}$ lb. of coarse brown sugar, $\frac{1}{2}$ a pint of beer, 4 lbs. of common rice or pearl barley, $\frac{1}{2}$ lb of salt, 1 oz. of black pepper, a few bread-rasplings, 10 gallons of water.

Mode.—Cut up the meat in small pieces, break the bones, put them in a copper, with the 10 gallons of water, and stew for $\frac{1}{2}$ an hour. Cut

up the vegetables, put them in with the sugar and beer, and boil for 4 hours. Two hours before the soup is wanted, add the rice and rasplings, and keep stirring till it is well mixed in the soup, which simmer gently. If the liquor reduces too much, fill up with water.

Time, $6\frac{1}{2}$ hours. Average cost, 1 $\frac{1}{2}$ d. per quart.

Note.—The above recipe was used in the winter of 1858 by the Editress, who made, each week, in her copper, 8 or 9 gallons of this soup, for distribution amongst about a dozen families of the village near which she lives. The cost, as will be seen, was not great; but she has reason to believe that it was very much liked, and gave to the members of those families a dish of warm, comforting food, in place of the cold meat and piece of bread which form, with too many cottagers, their usual meal, when, with a little more knowledge of the "cooking" art, they may have, for less expense, a warm dish every day.

Miscellaneous.

THE LATE MR. JONAS WEBB, OF BABRAHAM. —Mr. Jonas Webb may be said to have died in the very height of his success. It is true that he had gradually got clear of his famous south-down flock, as last summer witnessed their final dispersion. The glories, however, of the sheep had already been replaced, and at the great metropolitan show of this last summer Mr. Webb exhibited a young short-horn bull of his own breeding, which, in addition to the prize of its class, took the gold medal as the best male animal of the section. In fact, the repute of Babraham had in this way become as generally well established, and the American Speculator, the Spanish noble, or the French commissioner went down quite as much prepared to look at and bid for a pure pedigree cow as even for a score of short wool ewes. This visit to Babraham was in itself an event in a man's life, though we little thought, as we left the scene in July last, that the handsome, portly presence of Jonas Webb himself would never again give a genial grace to the occasion, however well the gatherings may prosper in other hands.

Mr. Jonas Webb never went far from his birth-place for a home of his own. He was born at Great Thurlow, in the county of Suffolk, on the 10th of November, 1796, being the second son of Mr. Samuel Webb, of West Wickham, Cambridgeshire, in which county his ancestors had long resided. Commencing business as a farmer at Babraham, in Cambridgeshire, in 1822, he speedily turned his attention to the breeding and improvement of south-down sheep; while his object and success will be perhaps best told by himself, in a letter he addressed to the *Farmers' Magazine*, nearly twenty years since, on the occasion of his portrait being given in that work: "I commenced

breeding south-down sheep as soon as I began business for myself, about twenty-two years since, from a conviction, through many experiments made when at home with my father with many different breeds of sheep, that more mutton and wool of the best quality could be made per acre from south-down sheep than from any other breed, upon nine-tenths of the arable land in this country, where sheep are regularly folded, especially where the land is poor and the animals have far to walk to fold. I began by purchasing the best bred sheep which could be obtained from the principal breeders in the county of Sussex, regardless of expense, and have never made a cross from any other breed on any occasion since. At the meeting of the Royal Agricultural Society of England, held at Cambridge in July, 1840, I won the first prize for the stock ewes and lambs of the south-down or any other short-woolled breed of sheep, and also the first prize for the shearing stock ewes, at the same meeting; since which time I have never shown for any prize but for rams, being convinced of the ruin inevitably brought upon all breeding stock by over-feeding. I believe I only raised two or three lambs from the nine shearing ewes which I had fed to exhibit at Cambridge; and I lost, I think, four of them also. My brother Samuel, who also resides in the same parish of Babraham, has shown for the shearing ewes prize for the years 1841, 1842, and 1843, and has obtained the first prize every year from my blood of sheep, he having purchased the ewes of me, and always hires my rams to put to them; he has been equally unsuccessful with those which he has over fed. I won three out of four of the prizes offered by the Royal Agricultural Society of England, at the meeting at Liverpool, in 1841, for south-down or any other short-woolled breed of sheep; and at Bristol, by the same society, in July, 1842, I won two, out of four, of the rams' prizes; and also at Derby, in 1843, at the meeting of the same society, I won three out of four of the prizes for any kind of short-woolled sheep; but in feeding sheep for that occasion, I over fed two of my best, and killed them before the show took place; they were both two-year-old sheep, and were each highly commended by the judges, as yearlings, at the Bristol meeting. I had refused 180 guineas for the hire of the two sheep for the season. I also quite destroyed the usefulness of two other aged sheep, by over-feeding them last year. They never either of them propagated throughout the season, and I have had each of them killed in consequence, which has so completely tired me of over-feeding that I never intend exhibiting another aged ram, unless I greatly alter my mind, or can find out some method of feeding them which will not destroy the animals, and which I have hitherto failed to accomplish. What I intend exhibiting in future will be shearlings only, as I believe they

are not so easily injured by extra feeding as aged sheep, partly by being more active, and partly through having more time to put on their extra condition, by which their constitutions are not likely to be so much impaired. I wish particularly to let the public know that in future I do not intend exhibiting aged rams, through the reasons which I have stated. You can, if you please, also notice my repeated success at the Smithfield club, and that I also obtained the first prize at the Highland Society's show at Dundee in 1843—the only time I ever exhibited stock in Scotland—for the best shearing south-down ram, the only prize I showed for; and, contrary to the rules of the society, the committee decided to have my sheep's likeness taken for the society's museum at Edinburgh. One of the rules of the society is, that no animal shall be taken as a specimen for that purpose, unless it is full-grown. My sheep was considered in every respect more finished and complete than any old sheep which had been exhibited. I also won the two first prizes last year at the Royal Irish Society's meeting at Belfast, and the society's medal for the best ram of any breed exhibited at the meeting, never having previously shown my stock in Ireland. At the Saffron Walden Agricultural Society, which is open to any person in the United Kingdom who chooses to subscribe to it, I obtained all the first prizes in all the classes of south-down sheep, with the exception of two, during the whole period I continued to show in it; and I also won the first prize every year for the best pen of shearing wethers of any breed, which I believe brought the south-down sheep more into repute, in this and the adjoining counties, than all the other prizes which I obtained, as there was at one time a strong prejudice against them." Even before the portrait could be published, as a pendant on which this letter was written, more material was ready; and the editor had to add a postscript: "Since receiving this communication from Mr. Webb, and which was previous to the meeting of the Royal Agricultural Society in July last, he has again been an exhibitor, in the class for shearing rams only, at the meeting at Southampton, and again obtained the first prize of 30 sovereigns." And we must again add "since" when the prize lists of the Royal Agricultural, and the annual lettings at Babraham, will tell how Mr. Jonas Webb's success as a breeder of sheep has still continued to increase, until, satiated with his own triumphs, he resolved to retire from the pursuit, and give others a chance.

His active mind, however, could not remain idle, and with his wonted sagacity he took up the short horn as he had done the south-down. For years, indeed, the herd and the flock were going together; but it was not till the former was about to be resigned that the

Babraham cattle came to take any especial prominence at the great meetings.—*Mark Lane Express.*

THE USE OF THE BAROMETER, &c.—Robert Bradley, Professor of Botany in the University of Cambridge, at the beginning of the last century, published a Treatise on agriculture, in which the following information is given as to the use of the barometer and thermometer. Professor Bradley was the discoverer of the circulation of the sap in plants, and defended the discovery with very considerable ability. The directions are in the form of a letter:—

Barometers will be of particular use to farmers, by assisting them to elect proper times for sowing and reaping.

The rules and observations made for knowing the weather, by the various rising and falling of the weather glass or barometer are these;—

1. That the least alterations in the rise and fall of the mercury in the tube should be regarded, in order for the right finding the weather by it.

2. The rising of the mercury presages fair weather, as the falling indicates the contrary viz, rain, snow, high winds, and storms.

3. In summer, if the quick silver be up a bout fair, and the weather very hot for four or five days, then we may expect black clouds to rise, and a brisk gale with thunder, and a shower or two, which will soon go off.

4. In winter, the rising presages frost; and in frosty weather if the mercury falls three or four divisions, there will certainly follow a thaw; but in a continued frost, if the mercury rises, it will certainly snow.

5. When foul weather happens soon after the falling of the mercury or quicksilver, we are to expect but little of it; and judge the same with respect to fair weather, shortly after the mercury has risen in the like manner.

6. In foul weather, when the mercury rises much, and continues so two or three days before the foul weather is over, then may we expect a continuance of fair weather to follow.

7. In fair weather when the mercury falls much, and continues for two or three days before the rain comes, then we may expect a great deal of wet, and high winds.

8. An unsettled state of the mercury denotes uncertainty and changeable weather, as sunshine, some black and some white clouds with frequent showers.

9. If the mercury be up at fair and does not fall, and it happen to rain, then we may expect but little of it.

10. If the mercury be down at rain, and does not rise, and the weather proves fair, then we may expect it not to continue.

11. We are not strictly to mind the words that are engraven on the plates, though for

the most part the weather will agree with them; for if the mercury stands at much rain, and does rise up to changeable, it presages fair weather, although it is not to continue so long as it would have done if the mercury was higher; and so on the contrary.

But to know how to judge still with greater certainty of the alteration of the weather we may accompany the foregoing instrument with a hygrometer, which will forewarn us of wet and dry weather, by pointing to us degrees of moisture or dryness in the air, and how one or the other increases. The best instrument I know of this kind is made of a catgut, about a yard in length suspended, having a plummet or piece of lead, with an index or pointer hanging at the lower end, by which means the catgut will twist or untwist as the air dries or moistens, and shorten or lengthen so as to raise or sink the plummet with its index, which will mark the degrees we seek after—the weight of my lead is about two ounces: but some who use fine whipcord instead of catgut, put a greater weight of lead.

The twisting or untwisting of either the catgut or cord occasions the lead with the index to turn round, as well as rise and fall; so that I choose to mark my degrees upon an open screw of brass, within which the plummet and index has its motion. There may be many devices for the figure of the weight or plummet, as a Cupid with an arrow in his hand to point at the degrees; or a bird with wings extended for flight, with some bough or branch in his mouth to serve for an index; these figures may be gilded for ornament sake; others may be contrived as fancy directs.

When we are provided with these two instruments, we should compare the motions of one with the other, in order to judge what proportion the rise or fall of the quicksilver in the barometer bears to the twisting of the cord or catgut, whose degrees of motion we may observe by the index or pointer of the hygrometer; and at the same time compare both these with the risings and fallings of spirit in the thermometer, to know what degree of heat or cold attends every different change of weather.

The thermometer shows, by inspection, the present condition of the air, whether it be hot or cold—which day in summer, is hottest, and in winter coldest, or any part of the day; and from thence many useful experiments have and may be made, viz, discovering the hottest or coldest bath, or the degrees thereof. So likewise of any spring, how much one exceeds the other in coldness.

When I can persuade my brother planter to use these instruments, I hope they will in their respective stations in and about Britain, make remarks upon the several motions of them, and fixing London as the standard communicate what remarks they make in the

several countries they reside in ; for by comparing one with another, we may come near a certainty what plants will grow and prosper in every part of the kingdom ; and from many observations of that nature draw such conclusions as may be of universal benefit.

R. BRADLEY

As I have taken occasion to publish this letter, I think it not amiss to prescribe a method for some of my readers to follow, in the accounts or observations they make on the alterations of the instruments named in it, viz, the barometer, hygrometer, and thermometer.

The method I shall propose, is that which is practised by the order and direction of the honourable Samuel Molyneux, Esq., to whom the learned part of the world is obliged for many great discoveries.

To give an example of this method according to the directions prescribed by the aforesaid curious gentlemen, we are to provide a book for twelve months' remarks, which should be made six times every day. At which times is to be observed.

1st, The rising or falling of the quicksilver in the barometer. 2nd, The alteration of the hygrometer. 3rd, The rise or fall of the spirits in the thermometer. 4th, The point of the compass from whence the wind blows, and as near as can be guessed with what strength. And 5th, Whether rain, snow, hail, &c., and what quantity fallen.

Each leaf of the book designed for this use should be divided into several columns ; the first for the day of the month and of the week ; the second, for the number of inches and parts of an inch in the tube of the barometer, where the quicksilver stands at the time of observations ; the third, to mark the degrees pointed at by the index of the hygrometer at the same time ; the fourth, to show the number of inches and parts of an inch in the thermometer, where the spirit stands at the time of observation ; the fifth, to mark the winds, and their strength ; and the sixth, for the quantity of rain falling, and disposition of the clouds and air.

ANTIQUITY OF THE PIG.—The pig is the existing representative of a very ancient race of mammals which lived and died upon this earth long before there were Christians to devour, or Jews to abhor their flesh. The same species of wild boar that was hunted by our forefathers was contemporary with the mammoth, cave-bear, and the longhaired rhinoceros. Some persons imagine that geology deals only with fossil shells or fishes ; but there is a vast deal of interest attached to the geological history of the predecessors and representatives of our domestic animals. We know that the wild ancestor of our domestic pig was in existence before the separation of England from the

Continent of Europe ; and that the hunter, had hunters then lived, might have chased the boar through forests the site of which is now occupied by the waves of the English Channel. Mammoths, tigers, and rhinoceroses perished, but the wild boar lived, and lives still on the Continent of Europe, though extinct here.—*Old Bones ; by the Rev. W. S. Simonds.*

Editorial Notices, &c.

AMERICAN POMOLOGICAL SOCIETY.—We are indebted to the officers of this Society for a Copy of their very interesting Report of the ninth session of the Society, held at Boston, Sept. 17, 18 and 19, 1862. It is a thick pamphlet of 230 pages, printed on exceedingly fine, white paper, somewhat of a rarity in these days, when good paper has become so expensive. Amongst the contents is a valuable catalogue of fruits, occupying 54 pages, showing the districts in the United States and Canadas, in which the cultivation of each kind is recommended by the Society. The remainder of the Report is taken up with the addresses, proceedings and discussions at the Convention.

NEW BRUNSWICK CENSUS.—By the kindness of J. G. Stevens, Esq., M.P.P., New Brunswick, we are in possession of a copy of the Census Report of that Province, taken in 1861, and lately submitted to the Provincial Parliament. The Report exhibits a very satisfactory state of Agricultural progress since 1851, when the last preceding census was taken. The present population of the Province is 252,047 ; the value of farms and stock \$32,780,310 ; the value of the agricultural products of 1861, \$7,709,382.

NEW BRUNSWICK BOARD OF AGRICULTURE.—We are also indebted to Mr. Stevens, who is Secretary of the Board of Agriculture of New-Brunswick, for a copy of the Report of that Board for the year 1862, being a well printed pamphlet of 80 pages, containing much interesting matter in reference to doings of the Board of Agriculture, and the Agricultural Societies of that Province for the past year.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES FOR MARCH, 1863.

The current number of this well-conducted Journal contains as usual a number of useful and interesting articles, original and selected. An elaborate article appears under the head of

THE TEST WELL AT ENNISKILLEN, in which the most important facts relating to the nature and distribution of Petroleum on the Continent are very clearly set forth. Dr. Hurlburt's article on the Chief Forest Trees of Upper Canada, originally prepared as descriptive of the specimens sent to the International Exhibition in London, cannot fail to interest many readers in Canada. Gold in Indiana, Wool and Woollen Manufacture, and a number of shorter papers will be found well worth a perusal.

It may not be known to some of our readers that this useful Monthly is published under the direction of THE BOARD OF ARTS AND MANUFACTURES FOR UPPER CANADA, at the very low charge of *fifty cents a year*, or eleven copies for \$5. To mechanics and manufacturers of every description it is peculiarly adapted, while farmers and general readers will find much to interest and instruct. Mr Edwards, the attentive Secretary of the Board, will forward the Journal to all pre-paid applicants, and give any information that may be required of the functions and proceedings of that body. The Library of Reference and Model Rooms are open free to public daily, in the New Hall of the Toronto Mechanic's Institute, Church street, and are well worth an inspection by country visitors.

The British Reviews:

We have received through Mr. Rowsell of this city, from the Publishers in New York, the American reprints of the last number of the WESTMINSTER, NORTH BRITISH and EDINBURGH REVIEWS. Considering the late calamitous fire with which the enterprising publishers, Messrs. Leonard Scott & Co., now of 38 Walker street, Broadway, New York, were visited, the reprints of the Reviews and Blackwood's Magazine have been brought out far more promptly than the public had any right to anticipate, and we trust that the publishers will find their labors appreciated by an increasing number of subscribers, particularly in the British Provinces, to the people of which these invaluable periodicals have both a special claim and adaptation, as the accredited exponents of British literature, science and politics. For particulars of terms, &c., we refer the reader to our advertising columns. Among the more interesting articles in the current numbers of the Reviews are the following:

THE WESTMINSTER:—Essays and Reviews,

with Dr. Lushington's Judgment; British Sea Fisheries; Railways: their cost and profits; Gibraltar; The Encyclopedia Britannica; The Religious Difficulties in India; The Slave Power.

THE NORTH BRITISH:—Christian Individuality; The Austrian Empire; Assimilation of Law France and Scotland; Popular prophetic Literature; Syria and the Eastern Question; The American Conflict.

THE EDINBURGH:—India under Lord Dalhousie; Gold-fields and Gold-miners; the Campaign of 1815; Modern Judaism; Convict system in England and Ireland; Public Affairs.

TORONTO MARKET PRICES.

TORONTO, MARCH 23, 1863.

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Barley, "	90 " 95
Peas, "	55 " 57
Oats, "	42 " 45
Rye, "	56 " "
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Beef, "	4 00 " 5 00
Mutton, "	4 00 " 4 50
Potatoes, per bushel,.....	55 " 60
Apples, per barrel,.....	1 00 " 1 25
Turnips, per bushel,	18 " 20
Onions, "	1 25 " 1 50
Fresh Butter, per lb.,.....	15 " 20
Tub Butter, "	12½ " 15
Eggs, per doz.....	14 " 15
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THE
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JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV.

TORONTO, MAY, 1863.

No. 5.

SPRING WORK.

The farmer now finds himself pressed on all sides with numerous operations, that have to be either commenced or completed. The present season cannot be pronounced an early one, but the ground, where properly attended to as regards ploughing, draining, &c., is in a good state for the reception of the seed. Not a moment should be lost in pushing on work, and in giving as good a finish to the various and important Spring operations as time and circumstances will admit; ever bearing in mind that the results of the harvest, in a great degree, depend on the manner in which field labour, at this season, is brought to a termination. Deep and clean culture, so as to secure a fine and porous seed bed, with a suitable dressing of manure, when necessary, constitute the basis of success in farming.

Although no precise time within the range of a few days can be stated for sowing grain, roots, &c., since so much must always depend on the character of the season, and the physical condition of the soil, it may be laid down as a generally correct rule that it is best that this important operation should be performed as early as practicable. In this climate Spring is but of short duration, and the farmer should always have matters so forwarded as to be able to commit the seed to the ground as soon as it is sufficiently warm and dry. To attempt the contrary—that is, to sow when the soil is cold and wet, particularly early in the season—will

be sure to end in disappointment and failure. Indeed, there is always a large extent of land put under crop, which, from practical inattention to these matters, is rendered comparatively unproductive.

It may, therefore, be regarded as a sound, general rule *to sow early*; bearing, of course, in mind those physical conditions of the soil and temperature before mentioned. Early sown grain will generally prove of the best quality, being both heavier, and having a larger proportion of nutrient ingredients. Recently, however, farmers have adopted the practice of sowing the *Fife* variety of wheat very late, in order to avoid the fearful ravages of the midge; an artifice that has been attended with considerable success. This variety of wheat is well known to be particularly hardy, but little liable to rust, and well suited for late seeding. We have known large crops of this variety sown as late as the middle of May, or several days afterwards; in that case, the ripening process of the plants being late, they escape the ravages of the midge.

The preparation of land for root crops should now, if not already done, be completed. The sowing of carrots and parsnips should be finished without delay, and mangel wurzel will immediately follow. The Swedish turnip can be sown from the middle to the end of the month, or even later; much depending on the character of the season, and the condition of the land. The extent of root culture in Canada is annually increasing, and the most approved

practices better understood. Potatoes still continue a very uncertain crop; and to increase largely their culture would, under existing circumstances, be unadvisable. Early planting, with healthy seed, of new varieties, and from different soils, on ground that is dry and moderately light, and not too richly manured, will have the best chance of producing a good, sound crop. A dressing of quick lime has, in many instances, been found highly advantageous. Yet, it must be acknowledged that, with all the precaution which ingenuity and experience can employ, the potato disease will often more or less manifest itself; and in the present state of our knowledge the most that we can do is to adopt such mitigating measures as may be practicable. The *Kohl Rabi*, or turnip cabbage, deserves a much fuller trial in this country than it has hitherto received. It is hardy and nutritious, excellently suited to milch cows, sheep, and stock in general. It should be sown as early as possible, and treated in a similar way to turnips. As a general rule, roots of all kinds should be sown or planted in drills at sufficient distances to allow of the free use of the horse hoe. The precise distance must depend on the kind of crop and the state of the ground; but it may be stated generally that drills should be from 30 inches to 3 feet apart, and the plants in the rows at sufficient distance apart to allow of free access of light and air, with ample space for mature growth.

Several enquiries have of late been made respecting the growth of tobacco, a useful paper on which will be found in another column of this journal. We would recommend parties engaged in this undertaking not to attempt too much, but to make a fair experiment on a small scale, doing full justice to every department, from the sowing of the seed to the gathering of the crop. Before this number gets into the hands of our readers, the seed should be sown in a hot bed, or at least, on a dry rich border, sheltered from the north and west. It is of great importance to get strong, healthy plants for early setting out, which in this northern section may be done the latter end of May, or beginning of June, according to the season. The seed is slow in germinating, taking often a month or more to come up, unless there is considerable bottom heat.

Land intended for tobacco should be naturally

rich, or made so by artificial means. The soil should be deeply cultivated, and the manure thoroughly incorporated with it. It is preferable to apply bulky manures, such as farm-yard dung, in the fall, and work it in by a deep ploughing, taking care to keep the ground as dry as possible by under or surface drains, as by such means the important operations of spring will be greatly facilitated.

Transplanting should be performed, if possible, in moist weather, the young plants well watered before they are taken up, and as much earth kept attached to their roots as may be practicable. Regard for these rules will in most cases ensure the plants from dying, and obviate the necessity of subsequent artificial watering, unless the weather continue particularly dry. The distance of the plants from each other is a matter that must be regulated by the strength of the land, character of the season, climate, variety, &c. The rows may be from 2½ to 3 feet apart, and the plants at a somewhat less distance asunder. In the course of two or three weeks the plants will commence growing vigorously, and the most vigilant attention must be given to the keeping down of weeds, which will be sure to make their appearance. This can be done by horse and hand hoeing;—an operation that must be repeated as occasion may require. By keeping the ground well pulverized during the season of growth, weeds are effectually prevented, and the progress of the crop accelerated, particularly in periods of drought. The tobacco worms will, after a while, make their appearance, and must be carefully watched and picked off by hand, or otherwise the crop will be greatly injured, if not wholly destroyed. When the plants get into blossom they must be topped, leaving about two thirds of the stems, each of which will have attached to it about sixteen leaves. In a short time the plants will produce suckers, which often grow with great rapidity, and if not removed as they appear, the crop will be injured. The cutting and harvesting of tobacco require much care, or the quality will be seriously affected. It may be fairly doubted whether we can raise in Canada an article of the best quality, that can compete in ordinary circumstances with the productions of a more southern climate. Under the present high prices occasioned mainly by the unhappy civil war in the United States, ordinary smoking tobacco

could be raised here with a profit, if managed with sufficient skill and judgment: but, regarding the Province generally, it can never occupy a prominent place among our farm crops.

Sorghum, or Chinese sugar cane, will no doubt be more extensively tried this season than heretofore, and we would recommend, as in the case of tobacco, that it should be proceeded with cautiously. We must not trust implicitly all the high flown statements that have been made respecting this plant; but sufficient facts have been adduced to induce and justify our farmers to give the matter a fair trial. That the sorghum can be raised here advantageously as provender for cattle, either in a fresh or dried state, and also for molasses, scarcely admits of doubt; but whether the juice produced so far north can be profitably converted into good granulated sugar, has yet to be determined. We shall be glad to be informed of the results that may be obtained in relation both to sorghum and tobacco.

Flax is demanding a larger share of attention this season, and its culture will doubtless be considerably increased. So much has of late been said and written on this subject that but little, if anything, remains to be added. This, like the two preceding crops, must be regarded to some extent, in Canada, as *experimental*, and therefore requires the exercise of both caution and judgment. The wisest way is not to attempt too much; an acre or two cultivated well will afford more profit and a far better test than a dozen acres indifferently managed. But flax growing in Canada can never be made of much account till each township procures the necessary appliances for rotting and scutching the straw, and a way opened up to a reliable market.

The severe privations which live stock are now enduring in some sections of the country, ending in some cases in starvation and death, in consequence of the failure of hay and other crops last season, should induce farmers to devote more attention to the raising of roots, which, in periods of scarcity like the present, will enable them to sustain their animals in a healthy condition till the pastures are sufficiently advanced to receive them. If Swedish turnips were more generally raised in the back townships, (and they are admirably adapted to new land) and such other provisions made as are practicable, we should seldom hear of cattle actually dying of hunger.

It is to be hoped, therefore, that our farmers will make every exertion this spring to provide an ample supply of cattle food for next winter.

SHEEP WASHING.

There is a good deal of discussion going on in the American agricultural journals at present, on the question, whether to wash sheep or not before shearing them. Some of the writers contend that the wool buyers do not make a sufficient distinction in the price between washed and unwashed wool, and that therefore the farmer who washes his sheep, has all his trouble and inconvenience for nothing, and gets actually less, owing to the loss of weight, for his wool than if he sold it in the natural state.

This may be the case, to some extent, in the States, but we are not aware that the same can be said in this country. We confess ourselves in favour of the practice of washing where the conveniences are at hand for doing it efficiently. The water should be warm and clean; the sheep should be carefully handled, and not kept in the water too long, but long enough to remove the dirt from the fleece. A very short time is sufficient to accomplish this with dexterous management.

The farmer, then, when he sells his wool, should take good care that the buyer makes the proper allowance in the price between the value of the clean and the dirty article. In the case of wool exported to England, especially, where good descriptions of Leicester and other long wools are much in demand, it is highly important that the fleeces should be in clean and good condition, for the sake of the reputation of our produce abroad.

DEATH OF SIR TATTON SYKES.

We learn from recent English papers the decease of this venerable Baronet and distinguished agriculturist, which event occurred at his country residence, Sledmere Castle, near Malton, Yorkshire. Sir Tatton had reached the ripe age of 91, and, till a period comparatively recent, evinced his usual absorbing interest in rural affairs, and participated in the sports of the field; for which, and the successful breeding of race horses, the Hon. Baronet had long enjoyed a world-renowned reputation.

Many of our readers will remember the pure blood stallion imported from Sir Tatton's stud, and called by his name, now some dozen or fifteen years ago. The *Mark Lane Express* truly remarks:—

As a perfect example of the "old English gentleman," Sir Tatton was known and esteemed throughout the country. Sir Tatton was born 1772, and married in 1822 the second daughter of Sir William Foulis, and in the following year succeeded to the title and estates on the death of his brother, Sir Mark Sykes. Sir Tatton was the fourth baronet, and is succeeded by his eldest son, Tatton (now in Egypt), born in 1826. The deceased baronet, from childhood, took the greatest delight in the rearing of sheep and horses, and to the last enjoyed the highest celebrity for his flock and stud. His breeding stud was believed to be the largest in England, numbering upwards of 200 horses and mares of all ages. As an owner of race horses he dates back to 1803, when he won with Telemachus at Middleham; and up to the age of 60 he continued to keep horses in training for the sole pleasure of riding them himself, Malton being his favourite place for displaying his well-known colours—orange and purple. His last time of riding a winner, his own property, was for the Welham Cup, on Langton Wold, in 1822, on "All heart and no peel," a name most applicable to the owner as well as the horse. His feats on horseback were almost fabulous; he invariably rode from Sledmere to London and back, whenever he had occasion to visit the metropolis, his rule being to ride to London and return as far as Barnet the same night. It is related of him that when a young man he started off to ride a race for a friend, and started home again immediately after weighing, the distance being very nearly 400 miles. Sir Tatton was never so proud in his life as when he led Sir Tatton Sykes, with Bill Scott on his back, back to the ring after the St. Ledger victory of 1846; this scene was the subject of Herring's picture, painted for the Messrs. Baily. Sir Tatton rode from Sledmere to Hampton-court to look at the stud of King William IV., and there was so pleased with an Arabian mare, that on the day of the sale he repeated the ride and bought the mare. As a master of foxhounds, Sir Tatton vied in popularity with any gentleman in England. He kept hounds solely at his own expense, until he had passed his 70th year, and only resigned the pack into the hands of Lord Mddleton on the determination of his son not to accept it. Sir Tatton still mounted in "pink" till about two years ago. Sir Tatton, his man Snarry, and his horse were all characters; the servant has been there 52 years, and Sir Tatton used to delight in saying that himself and his horse were 115 years old. Sir Tatton was ever an early riser, often mounting before the sun had risen. He never omitted attending the cattle fairs, and was the first man there at the Malton October of last year. It was not an unusual thing, when there was no hunting or other

engagements to call him away, to find Sir Tatton relieving a labourer at a stone heap or slashing a fence, while the labourer was sent to the ca tie to enjoy a flagon of ale. As a landlord, a master, and a friend, Sir Tatton was much beloved, and to him may justly be applied those words of commendation, "He never lost a friend nor made an enemy."

CULTIVATION OF TOBACCO.

[We have received of late several requests for information relative to the cultivation of Tobacco. Whether it is desirable to admit this into Canadian husbandry will no doubt be regarded by some as doubtful, even supposing that our climate and soil are, in all essential respects, suitable. Tobacco culture has been attended by an exhaustion of the soil in some of the richest portions of Virginia, and neighboring States: but it is said that this evil is now obviated by a judicious rotation of crops; and that tobacco is not raised on the same land but at intervals of five or seven years. We doubt whether the better qualities of this plant can be raised so far north as Canada, so as to compete with the productions of more southerly latitudes. In the extreme western part of the Canadian peninsula tobacco raising has been practised, on a small scale, for many years; and we should be glad if those who have had experience in the matter would favor us with their views and results. In the meanwhile we insert the following paper, prepared expressly for the purpose of affording practical information, by Col. L. J. Bradford, President of the Kentucky State Agricultural Society, who has had ample experience on the various points on which he treats; and we are further assured by several persons from that State, that the information and directions are correct and reliable. Of course, allowance must be made for difference of latitude as to time of sowing, &c. Here, the seed may be sown on suitable ground as soon as possible in April—say not later than 1st of May, and the transplanting to take place early in June. The Connecticut seed is supposed to be the best for these northern districts. A large crop of tobacco is about a ton to the acre; an average crop about 1500 lbs. The price of a good article of leaf, at the manufacturers, in ordinary times, is about 6c. to 8c. per lb. At present, we understand, a superior article is worth 20c.

The expense of cultivation and preparation for market is very considerable—say 40 to 60 dollars per acre.—Eds.]

The success of growing a crop of tobacco depends much upon early plantings. A matter of the first importance in its cultivation is to provide a sufficiency of young plants to set the crop, and in order to do this the planter must sow a bountiful supply of seed, as the young plants are subject to many casualties before a "good stand" is had. In this latitude, the time of seeding extends from the first of January to the first of April, and in ordinary seasons a bountiful supply can be obtained by sowing at any time during the periods alluded to. It is generally best, however, to sow as soon as the winter affords such a spell of weather as will allow a good preparation of the soil. New or forest land is preferable for plant-beds, and they are prepared by first burning the surface with brush or wood sufficiently to destroy the seed of any vegetation in the land, as grass or weeds. Beds prepared in the early part of the season require more burning than those at a later period. There is but little danger of burning too hard, however, at any time, as the plants generally succeed best upon the beds most thoroughly burned. After the beds are thus burnt and cooled off, they are dug up with a common sprouting hoe to a depth sufficient to afford the plant a loose soil in which to extend its roots. Care should be taken to leave the surface-soil as much on top, in the preparation of the bed, as possible, as the young plants will take a quicker and better growth. After the bed is well pulverized by hoeing and raking, the seed mixed with dry ashes are to be sowed as evenly as possible over the surface, at the ratio of a common table spoonful to every 80 square yards (cubic measure), the bed lightly raked over or trod evenly with the feet and well covered with brush, on which there should be no leaves, and protected from the intrusion of stock. So soon as the young plants attain the size of a dollar the brush may be removed—if the weather is very dry the brush may be suffered to remain to advantage, and when removed taken off in the evening—with seasonable weather, the plants will soon be large enough for transplanting.

The land designed for the crop should be fertile—if not naturally so, should be made so, by manuring. Any common manure will answer a valuable purpose, tobacco being a plant that delights in a rich soil. The land should be deeply and thoroughly ploughed, whenever practicable, in the fall or winter, and be subjected to the action of the frosts of winter. In this there is a twofold advantage: 1st, It destroys many insects that injure or destroy the young plant; 2d, It renders the land more friable and more easily cultivated. As the season approaches for planting out the weed (which is here from May to July), the land should be ploughed again and kept clean. It is then to be laid off with a plough three and a half feet one way and three

feet the other, and a small hill made in or on the check, as may be preferred, for the reception of the plant. The hill should be raised a little above the common level of the surface—the size of the hill being a matter of fancy with the planter, and not regarded as a matter of consequence in general. So soon as the plants have attained a sufficient size for transplanting, they may be drawn from the bed and planted out on the hills whenever there is moisture enough to prevent their dying. This is generally done after a shower; but, should the land be very wet, it is best to wait until it dries or settles some, as the plant will do best set when the land is not too wet. The plant, if it survives the transplanting, will soon commence growing, and requires no attention until the weeds and grass begin to make their appearance, and must be subdued by the plough and hoe. Should the earth become hard about the plant, the hill should be lightly scraped with a hoe. This will greatly promote the growth of the plant. When the plant becomes large enough, the bottom or plants leaves may be broken off. This is called pruning, and the land may then be deeply and thoroughly ploughed, taking care not to injure the roots of the plant, and the plant hilled up by following with hoes, and throwing the loose soil around it. In land that has been kept clean, this may be the last ploughing; the weeds and bushes may be kept down with the hoe, should any appear.

Where the plant is large enough to top, the leaves nearest the ground are to be broken off and the bud taken out, leaving on the stalk the number designed for the plant. The number of leaves, as we remarked about the size of the hill, is much a matter of fancy; yet it has more to do in forming the future character of the tobacco than most planters seem apprised of. Experience has fully demonstrated that ten leaves are sufficient for a plant, and this is almost a universal practice among our best planters. The first plant, if the crop has grown off unevenly, may be placed to twelve leaves; the next topping may be ten, and as the season advances, the number may be lessened, as the appearance of the crops and season indicate. This will insure more uniformity in maturing of the crop, saves much labor, and adds to the value of the crop, making it uniform in quality. At this stage of the crop the care and attention of the planter is almost constantly required to keep off the worms and other insects which prey upon it, and in breaking off the suckers which soon appear upon the stalk at every leaf. Ample employment may be afforded to every idler about the premises.

As the plant approaches maturity, it begins to thicken, and assumes a stiff, slick, and motley appearance, which the most unpracticed eye will readily detect. Should the weather be favorable (viz.: dry), the first ripe plants may be permitted to remain standing until a sufficient quantity is matured to satisfy the planter in making a regular cutting. If, however, the

weather be unpropitious, it is best to cut as fast as it matures, as it is subject to injury under such circumstances if suffered to remain too long. The harvesting of the crop is an important period in its cultivation, and neglect on the part of the planter will bring loss in its future value. In cutting the plant, a sharp knife is to be used, and the stalk to be split about half its length, taking care not to break the leaves or otherwise injuring them, and the plant to be set with the butt of the stalk up, exposed to the sun. So soon as the plant is wilted enough to handle without breaking, they should be taken up and laid in a heap of seven to nine in a place, being governed by their size, and hung as soon as possible to prevent being scorched by the sun. The after part of the day is best for cutting; there is less danger of getting the plant sunburnt. The sticks upon which the plants are hung are small pieces of timber four feet long, and of sufficient size to support the plants. These are taken to the barn on a cart or wagon after receiving the plants, or may be placed upon scaffolds in the field, at the option of the planter. If the weather is fair, it is best to sun it, as it aids the curing, and adds to the strength and elasticity of the leaf after it is cured. Care should be taken not to place the sticks too close, if the weather be damp and warm, as there is danger of injuring the plant. After remaining on the scaffold a few days it becomes yellow or assumes the color of a leaf in autumn; it must then be carried to the barn or curing house, and placed away, keeping the sticks far enough apart to secure a free circulation of air through them. If the weather is wet, it is best to take the plants to the house at once, and let the yellowing process take place in the house rather than risk the changes in the weather, as rain is always injurious to the plant after it is cut, and especially so after it becomes yellow.

The curing process is one of the most important features in the future value of the crop, and too much care cannot be given it, a small neglect lessening the value of the crop seriously. If the weather is dry and the tobacco is not too much crowded in the house, the action of the atmosphere, assisted by a small portion of fire, will be sufficient to effect the object. If, however, the weather is warm and damp, the atmosphere will not aid very materially in curing the plant, and unless firing is resorted to, the plant is certain to be more or less injured. It is always safer after a house is filled with green tobacco to rely mostly upon the action of the fire to a considerable extent. These should be small and slow at first, and continued so until the tobacco is clear of the moisture engendered by the fire, is dried out, and then increased until the leaf is nearly cured. When this is the case, the fires should be suffered to go out, and the tobacco to be suffered to come in case, or get soft again. The quality of the article will be improved by permitting it to come in case once or twice before it is thoroughly cured in stem and

stalk. Dry and sound wood is best for firing. If the object of the planter is to make a piebald or fancy article, care should be taken never to permit the leaf to get very soft during the curing process; and to make a really fancy article, the tobacco must be thoroughly yellowed before, and cured entirely by fire. This particular description is, however, not more desirable or valuable to the consumer, as the essential properties of the plant are frequently destroyed by the action of the fire. As a general thing, it is better to cure the weed by a natural process of air and the action of the atmosphere, and where the planter is provided with a sufficient quantity of room to house the crop without crowding too close, the object can be attained without the aid of much fire, and the wood and danger of the crop saved, and in some markets increase the value of the crop.

Having now arrived at the time when it is supposed the planter has secured and cured the crop, we proceed to give some directions in its future management and preparation for market—remarking that many, after all their previous care and labor, lose its profits to a good extent by either a want of knowledge as to its management, or a carelessness which is inexcusable upon their part. After being for upwards of thirty years engaged in its culture, and to some extent a dealer in the article—after visiting the principal markets in the Union—I have long since come to the conclusion (and I have never seen any reason for a change of the opinion) that the prices paid for the different qualities of the article by the purchaser is more generally a matter of fancy than of superior judgment on his part of the quality of the article bought, and that fancy was generally governed by the care bestowed by the planter in preparing the article for market. If this opinion is correct, how very important for the planter to so prepare his crop for market as to realize its greatest value, and I proceed now to speak definitely upon that subject.

After the tobacco has been thoroughly cured in stem and stalk, it is then ready to commence stripping or taking the leaves from the stalk. In this process the plant first passes through the hands of the most experienced laborer on the farm, who takes off the bad or injured leaves and ties them neatly in bundles of eight or ten. The plants that are thus culled are given to others who strip off the remaining leaves, and tie them in bands of six or eight leaves, wrapping tightly and neatly with the tip of the leaf used as a tie, so as to form a head of one and a half to two inches in length. Care should be had to make the bundles as uniform in size and color as possible, as it adds to the beauty of sample by which it is to be sold. When the days work is done, let the tobacco, neatly pressed through the hands, be put in a winrow, as it is termed, viz: laid straight in a bulk or pile of sufficient length to hold the day or two days' work, and only the width of one bundle and one-half, re-

versing each course so as to have the heads of the bundles out. Here it may remain until stripping season is over or the crop stripped. The first good drying spell of weather after the stripping get the smoothest and smallest sticks upon which the tobacco was hung, and hang up the tobacco to dry, carefully shaking it out when hung so as to secure a uniform drying. When the weather again becomes moist enough to bring the tobacco in case, take it down and carefully bulk it away as before directed, only taking more care to straighten the bundles and make the bulk much wider; this is done by lapping the bundles over each course, similar to shingling a roof, the bulker having his knees upon the bulk, carefully laying down the tobacco as it is straightened and handed him. When the bulk is finished, weigh it down heavily with logs or some heavy weight. Care must be taken that the tobacco does not imbibe too much moisture, or get too high in case before it is bulked, as it will injure. So soon as the tobacco becomes soft enough to handle without breaking, it may be put in bulk, and should the stems break a little under the pressure of the bulker's knee, no material damage will be done, provided the leaf does not crumble. A little attention will soon teach the most ignorant the proper order for safe-keeping. The tobacco will be safe in bulk, and will wait the planter's convenience to prize it in hogsheads.

In prizing, the different qualities should not be mixed, and if the planter has been careful to keep them separated, no trouble will be had in assorting them when ready to prize. In packing in the hogsheads care should be taken to have every bundle straight, and every leaf to its bundle. From a well-packed hogshead, any bundle may be drawn without injury or interruption to others. The usual way of packing is to commence across the middle of the hogshead, placing the heads of the first course of bundles about eight or ten inches from the outer edge and running the course evenly across; the packer then places the bundles of the next course in the same direction, the heads against the side or edge of the hogshead, and follows the circumference until the heads of the two courses come in contact; after that course is completed, he finishes the other side by placing the heads against the cask as before, so as to have three courses across the cask, the bundles all laid in the same direction, and the next layer is reversed, carefully placing each bundle as it is thrown or handed him. When filled it is subjected to the press or screw and forced down.

Our hogsheads are from thirty-eight to forty-four inches across the head, and fifty-six to fifty-eight inches in length, and from 1,800 to 2,000 pounds can be easily prized into them. If the tobacco is large, rich, and oily, the harder it is pressed the better, and the better price it commands. These remarks are particularly applicable to those heavy descriptions of tobacco known in Virginia as heavy shipping leaf, and

in the West as Clarksville tobacco, where the soil and climate are peculiarly adapted to the production of this description of tobacco. In climates not so well adapted and soil of a different character, the same variety of the weed will assume a different character, being of a finer or coarser texture, as the case may be, light and bulky, and destitute of oil and substance. Tobacco of this description should be managed as before directed, but prized lightly in the casks so as to admit of a free and open leaf, such being mostly required for cigar leaf.

There are several varieties of the weed, but as they all partake more or less of the same essential qualities under the same circumstances, it is unnecessary to enumerate them; the difference being more in the choice or fancy of the planter than any material difference in the growth and product of the variety, all requiring the same labor and attention, and the same cultivation and management. Climate and soil have very much to do in forming the definite character of the tobacco, and seed of any variety taken to another climate and a different soil may produce a very different article, and observation and experience alone upon the part of the planter can determine the best method of improving its character whilst becoming acclimated.

L. J. BRADFORD.

Augusta, Feb 2, 1863.

ON TURNIP CULTURE.

EDITOR OF THE AGRICULTURIST. Dear Sir, —Your correspondent B. N. B. wishes to learn the experience of some of your readers in regard to the turnip crop of the past season. And as I have the pleasure of reading your Journal, it may not be out of the way to give here the benefit of my humble experience.

I sowed one acre of turnips last season; one half of them I sowed on the flat surface, in rows 22 inches apart, and thinned out, from 10 to 12 inches in the row. On this half acre, I put twenty wagon loads of well rotted manure, in the fall, and plowed it in, and in the spring, I plowed it three times, and harrowed it in; by so doing I thoroughly incorporated the manure into the soil. I then sowed one hundred pounds of salt upon it, and then rolled it with a heavy roller, and marked it into rows as above stated. I used a piece of three-inch scantling for a marker, with a handle in the centre, and a brace on each side to guide and to strengthen it. In this three wooden teeth, one inch in diameter are set 22 inches apart—teeth six inches long. One man works this, thus opening two rows at a time, as one tooth must be kept in the last made drill to keep your rows straight. From off this half acre I harvested twenty two-horse wagon loads of turnips. On plot No. 2 I applied thirty wagon loads;

of well rotted manure in the fall, which I plowed under, and in the spring it was plowed three times, and harrowed well after each plowing. I then threw it up into ridges in the usual manner, and sowed the seed on those ridges. Its after treatment was similar to plot No. 1, viz., frequent stirring of the soil with the horse hoe, and carrying on a war of extermination against the weeds. From off this half acre, I had only 12 wagon loads, or about three hundred bushels, allowing 25 bushels for a wagon load. The flies never touched plot No. 1, but did considerable damage to No. 2. My experience is certainly in favor of planting on the flat system, thereby lessening the danger from droughts, and I think from the flies. I found no difficulty in using my horse hoe between the rows. To my horse hoe I had a small harrow attached, which most effectually uprooted all weeds that were loosened by the hoe, and left them on the surface to perish. I think Mr. Editor, that there is no use in trying to cultivate too great a breadth of roots, as one acre well tilled, and thoroughly manured, and sowed in drills from 20 to 30 inches apart, thinned from 10 inches to one foot in the drill, and well cultivated between the drills, will yield more turnips than two acres under ordinary cultivation. In fact, you cannot stir the soil too often. Your correspondent may think that I thinned out my turnips too much, and that there is no need in having so great a distance between the drills. The following table is given by Mr. Coleman, in his "European Agriculture," as the result of an experiment of an eminent agriculturist in England, which certainly coincides with my limited experience in growing turnips. The rows are twenty yards long.

Rows	No. of Turnips in each row.	Dist. apart in each row.	Average Weight of each Turnip in the row.		Weight of all in the row.	Produce per Acre topped and tailed.	
			Inches.	Lbs.		Stone Lbs.	Tons Cwt.
1	32	24	5½	11	12	24	4
2	38	22	3¾	10	2	20	1
3	39	20	3¾	10	00	19	13
4	40	18	3	8	10	17	15

Fractions are omitted.

The farmers of Canada are yearly becoming more and more impressed with the fact that an abundant supply of succulent food should be provided for their stock during our long winters—first as conducive to the health of their stock; and next as contributing essentially to the improvement of fattening stock, and as enabling the farmer to keep more stock; and lastly as furnishing him with the best means of enriching his farm, and extending and improving all his other crops. It should be the object of every tiller of the soil to leave his land in good condition after the removal of his crop, and at the same time

obtain as remunerating returns as possible. This can be done only by husbanding all the sources of fertility upon the farm, and adding thereto in every available manner. And now Mr. Editor, hoping that all of your readers will try "to steal an hour away," to give their experience through the medium of your very valuable Journal.

I remain, yours, &c.,

E. A. P.

Hope, March 24th, 1863.

FARMERS WILL WRITE FOR THEIR OWN PAPER.

EDITORS OF AGRICULTURIST.—I fully intended some time ago, to have made an earnest appeal to my brother farmers urging their assistance in support of your valuable journal, by a contribution of original or local matter that would prove both instructive and interesting to your readers.

Noticing month after month the great paucity of such matter, which to a certain class of your subscribers would prove far more interesting than the very able and scientific articles you have so liberally supplied us with, I consequently had, as I have before said, fully intended making an effort to persuade those who are able, of our profession, to give their experience in *black and white*. Or in other words, that they would let the agricultural world know of their whereabouts, and what they were doing. But reading with unspeakable pleasure in your March issue, the extraordinary announcement, "To correspondents—Several communications which have come to hand too late for the present number shall appear in our next," I felt myself quite relieved of the intended task I had imposed upon myself, and have now, instead, taken up my pen to congratulate you on the apparently new and extraordinary era that has so suddenly set in, in favor of your Journal.

In truth, I almost had to rub my eyes, and my spectacles to be sure of the truth of what I was really reading, so greatly astonished was I at the truly acceptable paragraph! Long may that paragraph continue to appear at the close of your monthly publication, is my earnest wish!

Your last appeal and philippick to my brother farmers, it would appear, has had its desired effect, if we may judge from that notice, and I pray that much future good may come of it.

That there are men in our community who are able to write, there can be no doubt, and it is a *burning shame* that they should hitherto have been either too lazy or too indifferent to give the results of their labor and experience to the world. Many of them however, are eager enough, to my knowledge, to secure valuable information from others, at a mere nominal cost, or I might fairly say, at no cost at all! But they are unwilling to give the "quid pro quo!"

Why should this be? If all were to pursue this plan, *where* could we look for the information and knowledge we require, and daily and thankfully receive from the invaluable agricultural articles so freely and frequently published?

I trust, Messrs. Editors, that henceforth such supineness will cease to exist, and that a laudable pride as well as that of interest will produce a praiseworthy emulation and ambition in adding something to the stock of knowledge at all times acceptable, and so much needed in our highly important calling.

If an agricultural journal is to be the instructive medium it is intended to be, to those agriculturists who take a proper interest in their profession, how is it possible that it can become so, unless practical agriculturists will give their experience and their aid, in occasionally sending a short article of their doings to their own Journal?

It is not, as you, Messrs. Editors, say, "the long and labored article that you want, nor need that article to be wove in the finest silk—if ever so home-spun, you will welcome it, and should it require a slight touch of your pen, you will cheerfully bestow it!" This should encourage all farmers, who are able to wield the pen, to try and send the results of their successful or unsuccessful operations.

Surely many of our profession must think that you have the power and the ability to *cook* articles on the subject of agriculture, when sitting at the desk in your office! That is, giving the *results* of your *imaginings*, for practical experience, and so, by such mysterious hocus-pocussing, fill your journal with *very interesting, and highly instructive articles for their perusal*! If they do not, how do they imagine that an instructive and interesting agricultural paper can be produced, when the results of all genuine experiments, and the much desired information needed, is withheld?

I am myself out of all business, and therefore cannot send my daily experience in agricultural matters, or I would occasionally, and gladly, contribute to your paper as heretofore. But the young, and the older experienced should make an effort to encourage and support your journal by articles that will prove interesting to your readers. And I earnestly hope they will do so.

I shall endeavor this next summer, if my health and other circumstances permit, to make a few experiments in garden culture, and if I deem them worthy of note, you shall have the result.

It seems the more extraordinary to me, that there should have been such a lack of communications to your journal (the sole one in Upper the Canada) from farmers of this province, when agricultural papers in the adjoining States, have more sent them than they can possibly insert, as I well remember hearing the respected Editor (Mr. Tucker) of the *Albany Agriculturist* once say, when I was in that city that, "he

had, at that time, more articles on his desk from voluntary correspondents, than he could possibly publish the next six months! I will not, Messrs. Editors, wish you quite such an infliction, but heartily do I hope your correspondents may numerically and satisfactorily increase to your heart's content.

Believe me, with sincere wishes for the future success of your Journal, truly yours,
LEICESTERENSIS.

March 24th, 1863.

OBSERVATIONS on RABIES IN SHEEP.

In our report of the proceedings at the Annual Meeting of the State Agricultural Society, we referred particularly to a paper recounting the complete history of several cases of Rabies in a flock of sheep, read by Hon. Henry S. Randall, and containing full details as to each animal attacked, from the inception to the termination of the disease, from notes daily made during its entire progress. As the fullest and most carefully prepared record of the kind extant, this paper possesses an especial interest, aside from that which ever attaches itself to so fearful and mysterious a complaint. Mr. Randall's design was to report all the symptoms and results connected with it, whether at the time apparently important or not—thus presenting a complete view of the case, and leaving it for further observation or individual judgment to determine the relative importance of the facts stated. The sheep belonged to the flock of Mr. H. P. Randall, and were bitten by a mad dog on Christmas Eve, 1862,—the flock consisting of about 300 ewes, three years old last spring, and in lamb. They were bitten mostly about the head, on the nose and ears, the wounds healing rapidly, and the existence of the disease being unsuspected until the 12th of January. On the 12th, Mr. Randall's observations commenced, and were continued daily until the 29th—the results of each day's examination being written down on the spot. The different cases were found to present some variation in the minor developments of Rabies, "owing, perhaps, to individual peculiarities of the different animals," but, as a whole, a remarkable identity was observable in the general symptoms throughout, and we give below Mr. Randall's careful summary of the conclusions attained:

FIRST SYMPTOMS OF RABIES.

Assuming that the rabid sheep which I have designated as No. 3, was seen by me on the first day of the attack of the disease—a fact of which I entertain no doubt, after comparing her subsequent symptoms with those of the later ones—and estimating the two first numbered cases to have had the average duration of the other five, the period of "incubation" in the whole seven (that is, the period between the sheep's being bitten and the appearance of

rabies,) ranged from fifteen to twenty-six days, and averaged about twenty-one days.

The first observed symptom in every case, which was seen at or near its commencement, was the same, viz.: ungovernable apparent salacity, manifested not according to the sex of the patients—all of which were ewes, and supposed to be in lamb—but in the manner in which the ram exhibits sexual heat. This resemblance extended to the minutest particulars in movements, postures, and in the characteristic note with which the male animal expresses desire as he approaches and importunes the female. In no instance did the rabid ewe show any of the usual indications of rutting. She incessantly attempted to ride her companions, but uniformly manifested rage, and turned and fought the one attempting to ride her. This propensity remained active until the sheep became too weak to exercise it, and never entirely ceased.

In all the cases rumination was totally suspended from the first visible attack of the disease until death; and throughout the same period all the patients, with perhaps one exception, were not seen to consume an ounce of natural food, though the choicest was repeatedly offered to them—in some instances, where they had been purposely deprived of it for twenty-four hours. They, however, manifested a depraved appetite. All of them frequently ate wool from each other, and gnawed the rails of their pen. One was seen to eat dungballs from the breech of another—another snow which had just been saturated with sheep's urine—and two, eagerly lick the mucus and saliva from the nose and mouth of a dead one, and afterwards the post mortem discharges from the same parts. They preyed upon every substance within their reach which was unnatural as food, except the flesh of their dead companions. Their eating, as I have termed, was attended, so far as could be observed, with no regular mastication. When they gnawed the rails of their pen, they held their head down and extended, so that it could not be seen whether they masticated or not. They did not pause and raise their heads to do so, but continued intently gnawing. The only evidence I had of their swallowing the wood, was that considerable quantities of it were bitten from all parts of the pen, and none of it could be found on the snow underneath; and as some of the wood gnawed was of a red, and much of it of a dark color, it would have been readily visible there. When they ate wool, dungballs, and the like, they generally snatched them as if in haste, and in all cases swallowed them after two or three rapid movements of the jaws, which were apparently only made to place the substance in a situation to be forced into the esophagus.

No exhibition of thirst was observed in any case, and on the other hand, no dread of water when it was placed in a pail before them.

One played in the water with her nose, as a horse is often seen to do, and drank a little without apparent difficulty. One or two were seen to nibble a little ice or snow on two or three occasions.

The evacuation of both dung and urine was very slight. The fœces appeared natural in color and consistency.

I came to the conclusion after considerable hesitation, that the disease in its earliest stages, and perhaps throughout, was accompanied by a slightly unnatural expression of the eyes, which for the want of a more expressive term, I have called glistening. But I do not think any one could safely undertake to select a rabid sheep from a flock, even if one was known to be there, by this indication alone. Yet, obscure as is this symptom, it is the only one which distinguishes the rabid sheep, in appearance, from one in perfect health, until emaciation and the other latter effects of the malady exhibit themselves. The animal is as gregarious as ever—eats its food and ruminates as placidly as usual—looks as plump, bright, and healthy as any sheep in the flock; half an hour later, with looks entirely unchanged, unless in the trifling particular named, it is moving around restlessly and incessantly among its companions, struck by a malady which has transformed the habits of its sex—which no human power can arrest or even palliate—and which will know no respite until terminated in a miserable death.

A PUGNACIOUS DISPOSITION MANIFESTED THROUGHOUT.

The subsequent occurrence and progress of the symptoms, in the cases observed by me, were about as follows: The rabid sheep both exhibited and provoked extreme rage when they were first put in a pen with other rabid sheep. They fought or pursued each other fiercely. But this mood soon subsided in the new comers, and for the next twenty-four hours they remained comparatively peaceable, at least unaggressive; but they were ever ready to fight on being ridden. On the second day, the depraved appetite manifested itself, and they began to rub their heads against fences, walls, &c., and to scratch with their own hind feet, leading to the inference that they were suffering severe cerebral pain. The part of the head invariably rubbed was that over the parietal bones. On the second or third day, the scars left by the dog's tooth looked red and inflamed. The sheep were more restless and irritable. They frequently assailed their companions, without any provocation. They fiercely butted, and two of them actually bit at a stick as often as it was pushed against or towards them. On the third or fourth day rushed at a man if he entered their pen, and bounded forward and dashed against the fence which separated them from him, on his thrusting a stick at them. Three of them

charged the fence if only a hat or handkerchief was shaken towards them. Two were so ungovernably fierce at times, that they sprung at a bystander if he uttered a sound or merely approached their pen. They bounded forward when they made these assaults, most of them omitting that loud snuffing sound (caused by a violent expulsion of air through the nostrils), by which rams, bulls, &c., often express their rage at the approach of some object. Two of them opened their mouths, gnashing and threatening to bite whenever they attacked a man or a stick, but I did not see them offer to bite when fighting their companions. On the fourth or fifth day, the wounds of a portion of them more or less re-opened. On the fifth or sixth day, they began to exhibit considerable weakness, and most of them displayed less ferocity. No. 1, however, remained indomitably savage to the last; No. 3, remained so until near death; and No. 6, after a temporary lull, became more deeply re-excited and furious, and remained so until death. These three last named sheep would rush at a man, a stick, or another sheep, when they were so weak as frequently to fall before reaching their object; and as soon as they could rise, they would renew the attack. They and others frequently fought each other when in this condition, constantly falling, and some of them uttering short bleating sounds, or groaning piteously when they were hurt.

Their voices on such occasions were more shrill and plaintive than the notes of the healthy sheep, but the only one I heard utter the usual prolonged bleat with which sheep call to each other, or to their keeper, uttered it in the natural key, and this was on the sixth day of the disease. Their notes were in no case very "much altered" from the usual ones which indicate rage, pain, &c., and the "howl of the dog," said by Mr. Youatt to be "characteristic of the disease," was entirely wanting. I do not suppose, however, Mr. Youatt meant to be understood literally, but merely that the key of their voices was changed, and rendered high and plaintive, as in the case of the rabid dog.

On the sixth day, one of the sheep began to rub her breech often and hard against the fence, and she continued this more or less until death. From the appearance of the parts, I inferred this was occasioned by an irritation of the vagina.

Those which exhibited the greatest decrease of aggressiveness, as their strength failed, never resumed the usual timid habits of their nature. They retreated from nothing; and to the last, if a man entered their pen and threatened them with a stick, they instantly attacked him.

THE LAST STAGES AND FINAL PROSTRATION OF THE SHEEP.

The prostration of strength progressed with different degrees of rapidity, owing probably

to their difference of constitutional vigor; but all showed much and rapidly increasing debility by the close of the sixth day. Their respiration was labored, and sometimes irregular. The pulse of the only one counted rose to one hundred and forty a minute. One became blind in one eye, one in both, and a third partly blind in one eye. The cornea in each instance became opaque and white. But this happened only where wounds of the dog's teeth could be found on the lids, or close to the affected eye. At this stage, the scabs of nearly all of them dried up, and their wounds appeared to be rapidly healing again. When standing quiet, their heads sunk down low, and they trembled slightly all over, as an animal often does after drinking cold water. Froth exuded in rather small quantities from the broad part of the mouths of three of them, and ropy saliva fell from the lips of one to the ground.

The last day or two of their lives they staggered in their gait, fell over their dead companions, and rose with difficulty. Finally they become unable to rise. The respiration was more labored and irregular, and in one instance stertorous. Their debility was extreme. Even at this stage, and until actually dying, they did not manifest that degree of "stupor" and "insensibility to all that is going forward" mentioned by Mr. Youatt. They looked up when a loud or unusual noise was made, and those that were not blind evidently took notice of objects of sight. And not one of them, to the last, showed the least indications of becoming paralytic, as the same distinguished author states rabid sheep usually do in England. Neither the appearance of the ground, nor their pastures, indicated convulsions or struggling at the time of their death. I saw some of them die.

The five cases which were seen throughout, extended respectively through nine, seven, eight, ten and six days—giving eight days as the average duration of the disease. While the preceding statement of the symptoms of rabies accords in leading features with that given by Mr. Youatt, there are even more discrepancies between them in detail than I have called attention to. I think it probable that these differences are due in some measure to local or incidental circumstances, such as the peculiar breed, constitution and habits of the animals, their previous keep, etc. In all these respects, the American Merino differs widely from the English breeds. The season of the year when the cases were noted, may also have had an influence. And finally, owing to climate, or other undetected causes, the malady may not assume precisely the same form in different countries. But be all this as it may, I at least know that I carefully noticed, and instantly, and, so far as I could, faithfully recorded the facts seen by my own eyes. I have especially referred to Mr

Youatt's statements, because his work on the sheep has ten, and perhaps twenty times the circulation of any other foreign work on sheep in our country—and he is justly regarded as very high veterinary authority. His experience with rabies in domestic animals, probably exceeded that of any other writer on the subject, and he is often cited with great respect by authors on that disease in the human subject. But from the manner in which he cites Mr. Harris' experience and observations in regard to rabies in sheep, and his entire omission to convey any intimation, directly or by implication, that he has been an eye-witness of it, I am led to infer that he did not describe the disease from his own personal knowledge.

An anticipated post mortem examination, in which an eminent medical gentleman has promised his assistance, has not yet taken place. *Cleveland Wool Grower.*

WASHING SHEEP.

There seems to be a strong disposition to revolt against the time-honored custom of washing sheep. Whatever conservative influences there are among us should be at once invoked, or "immemorial usage" may have to succumb to rampant innovation.

The whole matter of preparing wool for market needs careful revision. The present system of buying upon *the general average*, is an outrageous discrimination in favor of carelessness and fraud. Wool that will shrink twenty per cent. is bought at the same figure with wool that will shrink fifty per cent; hence, the man that "takes pains" does it at a serious loss. *The good sense of buyers* is but a poor guarantee for equal and exact justice to all wool-growers. The wool is bought in a hurry, and the agent that is the least particular, buys the most pounds, and gets the most pay. At present we have every degree of dirtiness, from that which is artistically put on, to that which is infinitesimally reduced by washing; and so on, in diminishing quantities till we reach the flocks that have little affinity for dirt, and the flock owners of the old school who wash thoroughly from the force of habit, or because they have a fancy that it is wrong to cheat. It all goes for about the same price, unless, perhaps, the clean wool brings less, because the man who is so unsophisticated as to raise it is too unsophisticated for a salesman.

Can we sooner get our *deserts* (which is just what a good many of us don't want,) by continuing to wash, or by giving it up? This is the real question. It is conceded that the manufacturer can purify the wool cheaper and better than we can, but it is of the highest importance that we adopt that method that will put every man's wool on its true merits. Washing would do this if all the wool was

perfectly cleansed and purified. I need not repeat that this is not the case. The assumption that *washed* wool belongs in one class, in regard to cleanliness, is the direct source of the grossest injustice. Washed or not washed, every individual lot should stand on its individual merits. I see not but that can be determined as well before washing as afterwards.

When the water is warm, and plenty, and clean, and convenient, it is no very serious matter to wash sheep. These contingencies, however, don't often happen. Our streams generally come from springs, and cold ones at that, approached by long and dusty roads, and the panting sheep take a cold bath, and keep on a wet blanket through, perhaps, a chilly night, to be followed, in some cases, by coughs and decline. If we *do* wash, we ought to use warm water, and house the sheep, unless very warm the next night.

It is now held by some of the best flock masters that early shearing (say the first of May) is preferable to the first of July—the sheep being, if properly protected against cold and storms, much better without their fleeces, while they are allowed to commence clothing themselves early for the next winter; but it is difficult, or impossible, to find a suitable time to wash and dry sheep, in this latitude, before the first of June.

I apprehend serious difficulty in fixing upon the proper allowance to be made for unwashed wool. It may be right enough to deduct "one-third" for very greasy or dirty fleeces, but clips in general will not be submitted to such shrinkage. I understand it is in contemplation to hold a meeting of wool-growers in Rochester early in April to discuss this matter, inviting buyers and manufacturers to meet with them. The subject is an important one, and if the change is to be made, it should, if possible, be generally concurred in.—*H. T. Brooks, in Rural New Yorker.*

ON TILE MANUFACTURE AND DRAINAGE.

EDITOR OF THE CANADIAN AGRICULTURIST.—
SIR:—In your number for January 1863, you call upon your subscribers to send on their contributions, to aid in filling up the pages of the *Agriculturist*. I would solicit through the medium of its columns, the insertion of a few suggestions, in reference to Tile-draining, and the pressing exigency for their manufacture.

In the county of Huron where I reside, being entirely a wheat growing county, many thousands of acres lie quietly undisturbed in a state of immersion, we might almost say waste condition, save perhaps what coarse pasture it may produce. Such land when once thoroughly drained, can be made productive of crops the most abundant. The neglect manifested in this important branch of agriculture is certainly much

to be deplored. I know not in this county, within the range of my knowledge, of a single farm that does not require draining, to an extent more or less. In this locality, where the country is for the most part cleared up, the first grand aim toward the development of its agricultural resources, is that of draining. But the proper material used for such purpose is here wanting. No tile works in this section have as yet been instituted; and, from present appearances no capitalist seems possessed of that daring energy, to embark in any such enterprise. In relation to the farmer, it would prove an enterprise of massive utility, though perhaps in the eyes of the projector of such a scheme it may appear a rather speculative and risky affair. I am confidently of opinion, that were tile-works to be constructed, in, or around the village of Clinton, they would ultimately prove highly remunerative; a lack of patronage at the outset might possibly cramp its energies, but assiduity combined with perseverance would certainly result in positive success. The government we are well aware, have granted large sums for the building of canals and railroads throughout the country, and have also made liberal appropriations toward the promotion of Agricultural Societies. For so doing they are deserving of much praise. Seeing that the government has heretofore aided the farmer in the construction of these great outlets for the products of the soil, the time has now arrived when they might give further "aid and comfort," by giving an impetus to the construction of tile-works, by granting appropriations in the shape of a loan, or in whatever shape they may deem proper; so as to give an impulse to the art of tile-making, whereby the farmer may be enabled to realize the benefit of this indispensable article at a moderate price.

Yours, &c.,

JAMES TORRANCE

Sixth Con. Goderich, Feb. 21st, 1863.

THE POTATO DISEASE.

MESSES. EDITORS OF AGRICULTURIST,—It is with diffidence that I approach a subject that has been so extensively commented upon by many able writers, and amongst them many practical agriculturists have taken a part. Yet, the subject still seems to be fraught with apparent mystery; though my own impression is that we are somewhat nearer a solution of it than we were a few years ago. And I think that any one who is able, from his own experience, or from that of his neighbours, should impart any new phase on the subject that may, in his estimation, tend to throw further light on a matter of such vast importance to the community at large.

I have not, however, taken up my pen with any view of entering into a controversial correspondence on the subject, but am induced merely to give a representation of two or three circumstances which occurred some years since,

immediately connected with the mysterious disease, and which have been brought to my mind by the perusal of two or three articles in the late January and March numbers of your journal.

Your correspondent from Blanchard seems quite to have made up his mind that the disease is to be averted by planting seed from new seedling varieties. This theory, however, is at once shown to be at fault, by letters from your Niagara and London correspondents, independently of what has fallen from other writers, proving, by *their experience*, that such theory is unquestionably untenable; though, doubtless, there may be advantages attending the planting of new seedling varieties. But to attribute the blight, or rot, as it is called, to the circumstance of using *old seed*, when there must indisputably have been thousands upon thousands of acres planted, with *new* as well as *old* seed at the very time the blight made its appearance over all Europe, and when the produce of all seed suffered alike from the plague, seems to me to be a *perfect fallacy*, and one that ought not, in my humble opinion, to be entertained for a single moment.

The facts which I am about to relate, and in one instance was a party to, will, I think, throw more light on the subject than your well-intentioned Blanchard correspondent has done.

It was in the second year of the blight making its appearance that I chanced to be spending a few days with a friend at Hamilton, and he having two very promising pieces of potatoes in his garden, was naturally very anxious that no check should mar his expectations of them, particularly as reports were then prevalent that the rot had again assailed the potato crop. I consequently strongly recommended sprinkling the tops with slaked lime, watering them freely first, that the dressing might adhere well to the tops, so that the little black fly, very similar to the turnip fly, could no longer perforate the leaves of the plants, thinking, *at that time*, that they were the cause of the grievous calamity, they having made their appearance *simultaneously* with the rot in the potato, and were, apparently, consuming the very life of the plant by the myriads of perforations they made in the leaves, which every day increased with new leaves, and which were daily shrivelled up as though scorched by the sun after the frost.

I found that I was by no means alone in the opinion I had formed as the cause of the trouble; but I *no longer adhere to that opinion now*, for I am fully convinced that it is atmospheric, and that the plant is attacked by a species of fungus, which is washed down the haulm of the plant to the tubers, hence the decay of the potato. And I have two very cogent reasons for this conclusion: first, because the several rows in the garden of my friend, before alluded to, which I dressed with slaked lime, were perfectly free from disease when gathered in the Fall, and the remaining rows, *undressed* for want of sufficient lime, were not useable from disease! What inference can any one draw from this statement but that the *lime* had de-

stroyed the fungus or disease upon the haulm and prevented it reaching the tuber? Each number of rows had received just the same treatment from the time of setting, as the others, with the exception of the dressing of lime. I learnt afterwards that the disease was prevalent in every ones crop that season around where my friend resided. The next circumstance I have to relate occurred the same year with a gentleman near Ancaster, upon whom I made a call on business at a time when he was hauling out manure from his farm-yard for a wheat crop, and had to pass over a piece of ground planted with potatoes, and as the oxen had trampled the tops, then more than half grown, pretty well to pieces, in going to and fro with their load, I remarked that the potatoes there would not, I feared, be worth much, unless, as I happened to say, the trampling of the tops to pieces, (they then being very luxuriant) should destroy the fly and check the disease that was then so prevalent, to which either the son or the father remarked, "we shall see the result when we lift them in the Fall;" and plainly enough the result did show itself, for, to my surprise, late in the Fall, I was told by the son, whom I accidentally met, that the potatoes *from the trampled rows were all sound and good*, whilst the other rows on each side those that were trampled were so diseased as to be quite unfit for use! Here, again, is proof positive that the fungus could not attach itself to the haulm in consequence of its mutilated and prostrate state. But I then thought that the fly, the supposed author, by many, of all the evil, had been crushed to death, or had been driven off by the trampling of the oxen, as the flies were then working at the leaves just as they had been in my friend's garden before alluded to. The vitality of the tops was not entirely destroyed; but yet not in a position, nor sufficiently thrifty to be injured by the blight, consequently the tubers continued to grow in a healthy state, and the produce was a large-sized good potato. I called this circumstance to the recollection of the gentleman, whose company I happened to be in last summer, and he said that "*he well recollected all the circumstances!*" In reading an article upon the potato disease in one of your numbers of last year, wherein the writer speaks of the successful result of his own experience in laying or beating down the tops of his potatoes, most forcibly reminded me of the singular coincidence of the case above related, to his own. He therein said that the potatoes in the rows on each side of those beaten down were entirely diseased, whilst those where the tops were prostrated, proved perfectly sound! Surely, Mr. Editor, there is food enough here for reflection, and the only conclusion that I can possibly arrive at is, that the tops were trampled down before the blight had struck them, or that they might have been struck at an early stage of their growth, and that the mutilation of the haulm stayed its progress.

I earnestly hope that some of your readers, and practical farmers, will give the experiment

a fair trial, and send the result to you for publication, taking care to effect the operation *immediately they perceive the haulm affected*, for by such means we may obtain much valuable information on the subject.

I think myself that the operation of laying down the tops (if a small patch in the garden), can be effectively performed by the spade, or by trampling down with the foot; if a large one, and in the field, it can be well carried out at little expense or trouble, with the roller, or driving oxen or horses several times up and down the rows, so as to mutilate the tops pretty much. The fungus cannot then very well settle on the stem, nor can it, if assailed in that position, be washed off the stem down to the tubers.

I am glad to see that both your correspondents, in your March number, take a similar view of the case with myself; but I perceive that neither have suggested the remedy which your correspondent of last year, or myself, have proposed.

Your Blanchard correspondent alludes to the success he has met with in his cultivation of the "Chili potato" ("Garnet Chili," I suppose) a seedling of five or six year's growth; at least. I feel pretty certain it is such from his descriptions of it. But he must allow me to suggest to him that his success in growing sound potatoes of that kind has not emanated from that circumstance alone of its being a seedling, but that I feel pretty certain that it arises from the fact of the haulm of that potato being of a coarse heavy nature, so much so as to be impervious to the fungus. And there is another potato that grows equally rank in the tops, and which has hitherto, with my son, resisted the blight; and that is the "*Victoria*," as prolific a yielder as the Garnet Chili. But neither of which do I admire for the table, both having rather a coarse watery flavor, and the former (*Victoria*) by no means so mealy as other kinds I have grown. But the age of the seedlings, both being, I think, 5 or 6 years old, or the soil may have much to do with this, as when I first obtained the "*Victoria*" from the late respected Dr. Sampson, of Kingston, it was as mealy a potato as I could wish for. But I have long found, from experience, that the potato in one soil and climate is quite a different potato in another; just so is it with the apple!

I could have wished to have said something in reference to two or three observations made by your London correspondent, respecting the phenomenon he alludes to, regarding the potatoes coming up in his carrot patch two years after sown; and also respecting the one patch of the potatoes being diseased, and the other not. But I feel that I have already trespassed too much on your space, and will take some other opportunity of making a few remarks after your correspondent has favored us with the remainder of his promised communication on the subject. There are also two or three other features regarding the rot that I must reserve for another letter, which showed themselves in last year's crop.

In the meantime, and in conclusion, I shall

just ask the question of my brother farmers, if the *red-rust* in wheat is not atmospherical? Why, then, should not the attack on the potato be atmospherical also? I may possibly be wrong in my surmise, though I think not. Yet, I consider myself quite open to conviction, and shall receive, with great interest, any new light that may be thrown on this important subject, by any of your subscribers,

And am, your obedient servant,

10th April, 1863.

LEICESTERENSIS.

THE POTATO DISEASE.

Continued from page 89.

London, C. W., April 20, 1863.

When first the potato was introduced into Europe to form, under the blessing of the Almighty, a large portion of food for mankind, and when it was first consigned to the earth with the view to its cultivation, the ground did not object to nourish and mature it, but as a good foster mother the earth fulfilled her duty—and she has during the past ages, under the superintendence of man, continued her faithfulness and care—and, although after a lapse of many seasons a fatal calamity visited the potato crop, still the earth most strictly continues her adherence, and we cannot accuse her of being an accomplice in the production of the existing disease; nor can she be held responsible in any way for the acts man may commit, whether for good or ill.

To enable me to arrive at an explanation, under my promise made at the conclusion of the first part already published, I must crave permission to refer back to the fall of the year 1860, when, as already stated, the crop of potatoes was of excellent quality and free from disease. It happened on one afternoon, after a good many potatoes had been taken up, that a sudden change of weather took place, and heavy rain prevented the possibility of taking all of them indoors, and those left outside were collected and covered over with potato haulm. When these tubers were uncovered the following day, with the intention of storing them, they were found too wet to remove, and were consequently left over another day; when, upon a second attempt, it was discovered that the disease gave very strong indications of its presence. These potatoes were fed off to the swine, but before they were all consumed, the rot assumed so malignant a character that even the pigs refused them. The whole of these rotten potatoes, about eight bushels, went to form manure, and from this very manure heap, and from that part thereof where the diseased potatoes had been deposited, a portion was used in the spring of 1861 to enrich the ground where the diseased tubers were found in the fall of that year, and also wherein the *young plants* were placed for experiment in 1862.

From the well known fact that the tubers were perfectly healthy when first taken out of the ground in 1860, it must be conclusive that the disease in this case was of atmospheric ac-

tion, and that certain peculiar characteristics of the soil where they grew, had not the tendency to develop it so long as the crop remained in the earth, and I feel convinced that had the soil been used for a covering instead of the haulm, the potatoes in question would have been found as free of disease when again uncovered as they were when first taken from the ground.

From these facts I think there will be no want of evidence to establish the reality that although the disease had not the power to fix its blight upon the crop while in the earth, it was there ready to seize upon it as soon as exposed to the influence of the atmosphere, and there being little room for doubt that this disease will exist in *unfermented manure, formed where swine are fed on unsound potatoes*, care should be taken never to apply it where this root is cultivated, and also to avoid using the haulm of the potato as a protection either against wet or frost. Although the manure of swine is a very valuable fertilizer, yet it is certain that under *any circumstances where it is extensively applied* to feed the potato crop, it generally produces a sort of skin disease, commonly called the scab. There being reason to believe that the haulm of the potato forms food for the disease after the tubers have been removed, and in order to prevent the possibility of its existing there, it would be well to have the haulm collected and consumed by fire; and, in regard to any diseased tubers that may be found, it would be more wise either to destroy them with the haulm in this way, or to bury them in the earth, below the range of future cultivation, than to feed them off to the swine.

Observation has proved that the potato malady abhors the solar rays—it delights to lurk beneath the foliage skirting the forest, and wood-belted plantations, facing the north-east, it also distinctly establishes itself in particular spots in the field and garden, where the sun cannot visit during the greater part of the day, and it is so partial in its attacks as to effect the north-east sides of the hills and ridges, on which sides or lines deserted tubers are found, whereas those growing on the opposite angles are untouched by the rot. Attention may also be directed to the fact that the disease does not generally feed upon the potato until late in the month of August; and, although under the existing mode of cultivation both weeding and hoeing the crop have at this time ceased, yet the sprinkling of either air-slacked lime or leached wood ashes, followed by a very light stirring of the earth at this season would tend to lessen if not altogether defeat the disease.

It is the practice in some sections of this country, as well as in Europe, to plant the sets in unbroken parallel lines, or ridges, moulding the earth *high* on both sides, with the plough. This practice may answer in a country where it is advisable to get rid of the rain as fast as it falls; but in this continent we seldom have too much wet from above, and the hill system will be found the most desirable, so long as *too much earth is not moulded up round the plant*. These hills should be at least three feet apart each

way, in order to admit of the thorough cultivation with the one horse cultivator and mould-board each way, thereby giving the hills a sufficiently elevated form.

To be continued.

THE PRINCIPLES OF CATTLE BREEDING.

MESSRS. EDITORS OF AGRICULTURIST.—I submit the following for the perusal of your numerous readers. Although much has been written upon the subject, much more might be said with advantage, if it would have a tendency to improve the all important race of animals to which the community is on the whole more indebted. They not only cultivate the land, but afford food of various kinds, in different circumstances of their existence. With respect to the points of symmetry in cattle, of which the various breeds exhibit several degrees of modification, there are certain rules which are generally acknowledged as applicable to good cattle of all kinds, of which I may treat in a future article.

We may offer a few remarks on the principles by which the breeder ought to be guided in the successful management or improvement of his stock, in whatever points he wishes to excel, whether those required by the grazier or the dairy-farmer. Every man, whether grazier or dairy-farmer, is desirous of turning his cattle to the most advantage, nor can this be done unless the size of the farm, soil, climate, the produce, and the nature and extent of the pasturage, be well considered, for the cattle that the farm is best adapted for maintaining will be the most profitable.

It is, however, essential, whatever the cattle be, whether for the purpose of the dairy or for the immediate supply of the market with their flesh, that they be well-bred, and excellent of their kind. To the dairy-farmer the most important points are, the quantity of milk yielding, its quality, its value for the production of butter, or of cheese, a freedom in the cow from vicious habits and ill temper, their character as good and healthy breeders, the ease with which, when useless as milkers, they become fattened for the market, and the nature and quality of food requisite for this purpose. To the grazier, the quickness of becoming fat, and at as little expense as possible, the fineness of the grain of meat or the muscular fibre, the mode of laying on the fat, the smallness of bone, soundness of constitution and congeniality with the soil and the climate, are the chief points which he takes into consideration. If he is wise he will never stint keep, nor transfer his stock from a good to an indifferent soil, and this is true also with respect to the dairy farmer.

Beauty of form is desirable; indeed it is more or less connected with what may be

termed utility of form, that is, a preponderance of those points in the beast which are most delicate for the table, and bear the highest price, over the parts of inferior quality, or offal. This is connected with smallness of bone, but not a preternatural smallness, and with a tendency to deposition of fat, which, however, should not be carried to an extreme, otherwise the quantity of flesh is disproportionate, and its fibre is dry and insipid; nor is the weight of the beast proportionate to its admeasurement.

Previously to the time of Mr. Bakewell, the cattle in general were large, long-bodied, big-boned, flat-sided, or as it is called in Yorkshire "lyery." This truly patriotic breeder, acting upon true principles, energetically set to work upon the improvement of cattle, and in defiance of opposition and a thousand difficulties, lived to see the success of his long continued efforts. Experience and a close and acute observation had taught him that "like produces like;" in other words, that the quality of the parents, such as beauty or utility of form, disposition to fatness, goodness of flesh, abundance of milk, and an even temper, were inherited by their offspring, and that by careful selections on the side of both the sire and dam, a breed might be ultimately established to which the title "blood" could be distinctly applied. This of course supposes a primary selection, then a selection of such of the offspring as exhibit the properties which constitute their perfection in the highest degree; and again of the offspring of these, and so on progressively.*

At first Mr. Bakewell was necessitated to breed in and in, but as his stock increased he was enabled to interpose more or less remote removes between the members of the same family; and ultimately he established the Dishley or New Leicester long-horns, a breed remarkable for smallness of bone, roundness of form, aptitude to fatten upon a moderate allowance, and fineness of flesh. But while he accomplished this, rendering the animals admirably suited for the grazier, it was found that their qualities as milkers were much deteriorated, the dairy-farmer consequently retained their old breed, noted for the richness, though perhaps not the great abundance of the milk.

We are not here speaking about the differences or the distinguished excellences of the various breeds of cattle, but of the principles upon which excellences, it matters not of what sort, may be obtained. "Lie produces like," and both parents must represent the same excellences, the same characteristics. It was by following out these rules that Mr. Bakewell arrived at perfection in his breed indeed, by some he is thought to

* Mr. Bates' rule was, "Breed in and in from bad stock, and you commit ruin and devastation, but if a good stock be selected, you may breed in and in as much as you please," and he followed this practice for fifty years, and yet had one of the finest breeds ever known.

have pushed his principles too far, and the following remarks have perhaps some justice in them.—“It was his grand maxim, that the bones of the animals intended for food could not be too small; and that the fat, being the most valuable part of the carcass, could not consequently be too abundant. In pursuance of this leading theory, by inducing a preternatural smallness of bone and rotundity of carcass, he sought to cover the bones of all his animals externally with masses of fat. Thus the entire New Leicester breed, from their excessive tendency to fatten, produce too small a quantity of eatable meat, and that, too, necessarily of inferior flavor and quality. They are, in general, found defective in weight proportionately to their bulk, and if not thoroughly fattened, their flesh is crude and without flavor, while, if they be so, their carcasses produce little else but fat.”

“This great and sagacious improver (Mr. Bakewell), very justly disgusted at the sight of those huge, gaunt, leggy and mishappen animals with which his vicinity abounded, and which scarcely any length of time or quantity of food would fatten, patriotically determined upon a more sightly and profitable breed, yet, rather unfortunately, his zeal impelled him to the opposite extreme. Having painfully and at much cost raised a variety of cattle, the chief merit of which is to make fat, he has apparently laid his disciples and successors under the necessity of substituting another that will make lean.”

Granting the truth of these strictures, which we scarcely can to the full extent, what is the inference as it respects the system of breeding? Namely, this, that by pursuing the proper mode, by proper selections, and by joining like excellences and properties in the sire and dam, and not by harshly crossing distinct breeds, but by making one breed the great foundation and working upon it, remembering that “like produces like,” not only will the new point aimed at be attained, but it may even be over-shot, thus demonstrating the power which the judicious breeder possesses.

Since Mr. Bakewell's time the New Leicester breed has become degenerated. By some the stock has been bred in and too closely, and by others very injudiciously crossed. In the meantime the short-horned breeds of cattle have been gaining an ascendancy so that few really excellent long-horns are now to be seen. This, however, has nothing to do with the great principles we have endeavored to illustrate; they apply alike to all breeds of cattle. Every breeder, then, should well consider the properties of the stock from which he breeds, investigating their good qualities and their bad qualities, and while he endeavors to keep up or improve the former, he should study to remove the latter. His selections must be strict, the heifer or cow should have as few of the bad points as possible, every excellence in per-

fection, and be in good health, the bull should be of the same kind, and if related, only in a remote degree, nor should he have been brought up on a pasturage differing from that of the cow, or under the influence of different local climate; he should not only possess the good points desired, in all their perfection, but he should also have points which the farmer considers to be the excellences of his own stock, as admirably developed. Thus acting with judgment he may expect improvement, and if he fail, there is some concealed fault which has been overlooked, either on the one side or the other, or some defects in their parents, and which (in accordance with the tendency there is in families to exhibit from time to time certain peculiarities, latent perhaps for a generation) has again made itself manifest; consequently, on both sides there ought to be what is termed “good blood.” But this is to suppose a stock already improved to a great extent, and here we may repeat the injunctions laid down by the Rev. H. Berry, which more particularly apply to the farmer commencing *de novo*.

“A person selecting a stock from which to breed, notwithstanding he has set up for himself a standard of perfection, will obtain them with qualifications of different descriptions, and in different degrees. In breeding from such he will exercise his judgment, and decide what are indispensable or desirable qualities, and will be of the give and take kind. He will submit to the introduction of a trifling defect, in order that he may profit by a great excellence, and between excellences perhaps somewhat incompatible, he will decide on which is the greatest, and give it the preference. To a person commencing improvement, the best advice is to get as good a bull as he can, and if he be good of his kind, to use him indiscriminately with all his cows, and when by this proceeding, which ought to be persisted in, his stock has, with an occasional change of bull, become sufficiently stamped with desirable excellences, his selection of males should then be made to eradicate defects which he thinks desirable to be got rid of.

“He will not fail to keep in view the necessity of good blood in the bulls resorted to, for that will give the only assurance that they will transmit their own valuable properties to their offspring; but he must not trust to this alone or he will soon run the risk of degeneracy. In animals evincing an extraordinary degree of perfection, where the constitution is decidedly good, and there is no prominent defect, a little close breeding may be allowed, but this must not be injudiciously adopted or carried too far, for although it may increase and confirm valuable properties, it will also increase and confirm defects, and no breeder need be long in discovering that in an improved state animals have a greater tendency to defect than perfection. Close breeding from

affinities impairs the constitution and affects the procreative powers, and therefore a strong cross is occasionally necessary."

The dairy-farmer, however, is less concerned in this high breeding than the grazier, yet he is not by any means indifferent in the matter, for his aim ought to be to obtain a breed no less valuable as milkers than for their disposition to fatten when the milk is dried. These two qualifications are not to be attained very easily, yet they may be, and indeed, have been attained, and especially among the improved short horn breeds, as those of Durham and Yorkshire, or the cross-breeds between the old Shropshire and Holderness. The breeds most valued in the great dairies around the Metropolis are mixed between the Yorkshire, Holderness and Durham. For quality and quantity of milk they are eminent, and when dry they are in general readily fattened for the butcher.

W. A. C.

Ancaster, April 16, 1863.

INFORMATION F R IMMIGRANTS.

A Committee of the Legislative Council has issued the following circular, with the view of eliciting information that will convey an adequate idea of the resources of this Province to persons proposing Emigration from Europe.

LEGISLATIVE COUNCIL,
Quebec 3rd March, 1863.

SIR,—The Committee of the *Legislative Council* appointed to "take into consideration the subject of Immigration, and especially to report upon the best means of diffusing a knowledge of the great resources of the Province, so as to induce the influx of men of capital and manufacturing enterprise" are anxious to obtain your views as to the advantages which the Province presents to Agriculturists of moderate capital coming from Europe, or from other parts of the Continent, especially upon the following points, viz:—

As to the facility of obtaining valuable cleared farms near Railway Stations or Water Communication, at such prices as will prove a safe and profitable investment?—As to the returns which may be gained from the soil, if farmed with care and judgment?—As to the rates of interest to be obtained upon perfectly reliable securities? And as to the many other advantages which Canada affords to men of moderate capital?

The Committee would also be glad to receive full information from you in regard to the advantages of your own district of country; their object being to publish reliable facts in Europe and elsewhere, for the guidance of those disposed to emigrate.

Be pleased to favor the Committee with an early reply, and oblige, &c. &c.

GEORGE ALEXANDER.

Chairman.

FLAX CULTURE.

There is apparently more movement amongst our farmers on the subject of flax culture, this Spring, than ever heretofore. From the scarcity of raw cotton for manufacturing purposes, owing to the American war, other fibres, which had been more or less displaced or superseded by the cheaper article of cotton, are again coming into active requisition. Hence the increased attention directed towards the production of wool and flax on this continent and Europe. Although under ordinary circumstances, in times of peace, linen goods could scarcely be manufactured at a low enough cost to compete with cotton fabrics for such general purposes as they may be used in common for, yet when cotton rises to double or treble its former value, the conditions of the competition become more equalized, and linen goods may find a sale at better prices than formerly, and which may afford a handsome profit to both the grower and manufacturer of the flax.

It is not, however, for the products of the loom alone that flax is in demand. Much is used in the manufacture of thread, twine, cordage, &c., and with the increased consumption of the fibre in manufactures of a finer description, the way is cleared for the sale of increased quantities of qualities of the raw material suitable only for coarse products. If the growers of flax in this country, for want of sufficient knowledge or appliances, do not succeed in producing an article fit for the finest purposes of manufacture, they may yet be so far successful as to produce a fibre which they can sell at remunerating prices for coarser purposes.

We have already, at various times, given full particulars of the mode of cultivation of flax, and its preparation for market. Our remarks at this time, therefore, need be but brief. The cultivation is as simple as that of any other crop. Any good clay loam is a suitable soil. The ground ought to be in the finest possible state of tilth, and as clean and free from weed seeds as possible. The seed should be sown when the soil has got sufficiently dry and warm, and the season sufficiently genial, to be suitable for the sowing of other crops—barley for instance. When the soil and the season are suitable for sowing barley, then flax may also be sown. The ground should be harrowed

smoothly before sowing the seed, which should be very lightly harrowed in afterwards, so as to cover the seed not more than about an inch in depth. As to the quantity of seed, if a crop of seed is the principal object, a bushel to the acre is sufficient. If a fine quality of fibre is the object, without reference to the seed, two bushels to two and a half should be sown. If it is desired to secure both results as far as possible, then a medium quantity—say five pecks, or from that up to seven pecks will be required.

Seed of good quality, this Spring, is, unfortunately, scarce, and held at a very high price. We have had many inquiries, as to where it could be obtained, which we have not always found it easy to answer. The demand has been greater than anticipated, or we certainly should have expected that some of our merchants would have imported a quantity to meet it. Under the circumstances, all that the farmer, who wishes to sow a little flax, can do is to get the best seed possible. It should be plump, fresh in appearance, of a uniform bright brown colour, and free from mixture with other seeds. This last point is most important. If the farmer finds, on procuring his seed, that it contains any admixture of weed seeds, he should take every possible means to clean it thoroughly before sowing.

We trust that ere another season comes round, there will be, by some means, provision made for the importation of a sufficient quantity of the best Riga seed to meet the requirements of the country.

Agricultural Intelligence.

ROOT CULTIVATION.

The following Report of the results of a competition in the cultivation of Field Roots, in the County of Wentworth, last season, though written and forwarded to the parties to whom it is addressed last autumn, has only just now been placed in our hands. The events recorded, therefore, are not altogether recent, but the statements of the mode of cultivating the different crops, and the results, may be read with interest and advantage at this season of the year.—[EDS.]

Report of the Judges appointed to decide the Prizes offered by the Directors of the Hamilton and Wentworth Agricultural Societies, for the best field of Turnips, not less than two acres, 4 Prizes; and for the best piece of Carrots, not less than $\frac{1}{4}$ acre, 2 Prizes; and the best piece of Mangel Wurzel, $\frac{1}{4}$ acre, 2 Prizes.

To H. R. O'Reilly, Esq., Waterdown, and W. A. Cooley, Esq., Ancaster, joint Secretaries of the above Societies.

GENTLEMEN,—

We, the undersigned Judges, beg to report as follows on the root crops which we inspected: On Monday, the 27th October, we proceeded on our tour of inspection, accompanied by Mr. O'Reilly, who did us good service, and assisted us very much in the duties we had to perform. Leaving Dundas about 2 o'clock P.M., we called on the different competitors in the following order: For Turnips, our rule was, in each case, to measure off a square of 25 feet (being within a fraction of the 70th part of an acre), in such portion of the field as presented a fair average of the whole; and to weigh and measure the produce carefully. For Mangels and Carrots, our rule was to measure off $12\frac{1}{2}$ feet by 25 feet, being the 140th part of an acre, and weighed and measured the produce the same as the turnips.

First.—Mr. Joseph Webster, West Flamboro', near Dundas, about one acre of White Belgian Carrots, pretty pure, but small roots, and rather thin on the ground; soil, clayey loam; well manured; measured off a piece, $12\frac{1}{2}$ feet by 25 feet, being a fair average of his crop; topped off the carrots, and cleaned the soil from the roots; measured one bushel, which weighed 56 lbs.; measured off the produce of the piece, which yielded 7 bushels.

54,880 lbs.	914	bus. per acre.	60 lbs. to bus.
	980	"	56 " "

Second.—Mr. John Wier, West Flamboro', a fine field of Purple Top Swede Turnips; about five acres; sown after sod, manured in the Fall; about 10 waggon loads of manure to the acre ploughed in; well tilled in the Spring, and about 500 lbs. of bone dust put into the drills before the seed was sown. The crop was very fair and even; sown about the 10th of June, 3 lbs. of seed to the acre; soil, a black loam, partially drained, and in a very good state of cultivation; measured off 25 feet square, 11 drills; topped and rooted them in the ordinary way, and found the yield to be 11 bus., 67 lbs. to the bus.

51,590 lbs.	859 $\frac{5}{8}$	bus. per acre.	60 lbs. to bus.
	770	"	67 " "

Mr. Wier's farm is beautifully situated on the Flamboro' Heights, and commands a fine view of the surrounding country. The soil is varied and well adapted for growing grain and root crops; he cultivates about 250 acres.

Third.—Mr. Thomas Hatt, Ancaster, close

to the town of Dundas, a pretty field of about 7 acres, nearly all Purple Top, with a few of Skirving's Improved; a fair crop of turnips, very even in the drills; had evidently been well attended to in the hoeing season, as the crop was very clean, and no weeds of any kind in the field; drills 2 feet apart; soil, a sandy loam. After wheat, ploughed in the Fall, and manured with about 16 waggon loads of barn-yard manure to the acre, drilled up in the Spring, and sown about the 15th June, at the rate of 2½ lbs. seed to the acre. The bulbs were of a medium size, and very few necks. Measured off 25 feet square, which produced 13½ bus., at 66 lbs. to the bushel.

61,215 lbs. 1020 $\frac{1}{2}$ bus. per acre. 60 lbs. to bus.
927 $\frac{3}{8}$ " " 66 " "

Mr. H. cultivates about 200 acres. Keeps a dairy of 12 cows. Night coming on, we could proceed no farther. Our thanks are due to Mr. and Mrs. Hatt, for their kind hospitality.

Fourth.—On Tuesday morning we proceeded with our work of examination. Had a long drive of about 7 miles, to the farm of Mr. John Ireland 2nd con. Township of Ancaster; a very nice field of Skirving's Purple Top; about 3½ acres; crop very uniform; bulbs medium size; drills 26 inches apart; soil, light loam; crop after oats; ploughed in the Fall, and manured in the Spring, with 15 waggon loads of stable manure to the acre; seed sown 24th June, 1¼ lbs. to the acre. Taking the average of the field, and measured off the 25 feet square, the produce was 12 bus. at 67 lbs. to the bus.

56,280 lbs. 938 bus. per acre. at 60 lbs. to bus.
840 " " 67 " "

Mr. Ireland cultivates 150 acres.

Fifth.—Mr. Wm. Crawford, next farm to Mr. Ireland; about 3 acres of Purple Top Swede; a fair crop, with few blanks; bulbs medium size; soil, a clayey loam; after oat stubble; ploughed in the Fall; no manure; well worked in the Spring; seed sown in drills 2 feet apart, about the 24th June, at the rate of 2 lbs. to the acre. Produce of 25 feet square, 11½ bus. at 69 lbs. to the bus.

56,752 lbs. 945 $\frac{3}{8}$ bus. per acre. 60 lbs. to bus.
822 $\frac{3}{8}$ " " 69 " "

Sixth.—Thos. Dunbar, Ancaster, 1½ acres of White Belgian Carrot, pretty pure, a fair crop but roots not large; drills 21 inches apart; soil sandy loam, ploughed in the Fall after wheat stubble, and manured with 15 waggon loads of manure to the acre; seed sown about the 10th of May, at the rate of 3 lbs. to the acre.

Twenty-five feet by 12½ feet yield 7½ bush. at 58 lbs. to the bush.

60,900 lbs. 1015 bush. per acre 60 lbs. to the bus.
1050 bush. " " 58 lbs. " "

Mr. Dunbar also competed with Mangel Yellow Globe, sown and cultivated in precisely the same manner as his carrots.

Twenty-five by 12½ feet yield 7½ bush. at 59 lbs. to the bush.

58,852 lbs. 980 $\frac{5}{8}$ bush. per acre. 60 lbs. to the bus.
" 997 $\frac{5}{8}$ " " 59 " "

The bulbs were small, but they weighed very heavy, and we were rather surprised at the result from their appearance in the field; they looked rather a poor crop but they told up pretty well when taken up and weighed.

Seventh.—A pleasant ride of a few miles brought us to the residence of Mr. W. A. Cooley, near the Village of Ancaster; he showed a very fine field of Purple Top Swede turnips, about 6 acres, well cultivated and in the very best of order. The soil a black alluvial, very rich; the turnip crop was after wheat, ploughed in the Fall, well manured with 13 waggon loads of good barn yard manure to the acre; worked well in the spring and sown in drills 2 feet apart; seed sown 18th of June, at the rate of 3 lbs. to the acre. After selecting a fair average of the field, we measured off the 25 feet square, weighed 1 bush. 69 lbs., measured the produce of the piece 12½ bush.

60,375 lbs. 1006 $\frac{1}{8}$ bus. per acre. 60 lbs. to the bus.
" 875 " " 69 " "

Eighth.—Our next visit was to Mr. John Renton, Township of Glanford, about 7 miles from Ancaster, looked over his field of Turnips of about 4 acres of Purple Top, pretty pure but not a very even crop, a good many blanks; drills 30 inches apart, which is rather far to produce a profitable crop of turnips. The crop was after wheat stubble manured in the Fall and ploughed in at the rate of 15 waggon loads of barn yard manure to the acre; the soil a pretty strong clay, required a good deal of work in the spring to make it fit for the seed, which was sown 10th of June, at the rate of 3 lbs. to the acre; 25 feet square yielded 10½ bush., 69 lbs. to the bush.

50,715 lbs. 845 $\frac{5}{8}$ bus. per acre. 60 lbs. to the bus.
" 735 " " 69 " "

Mr. Renton cultivates about 70 acres, the ground is rolling but from the strong nature of the soil it is well adapted for growing wheat. Night coming on after we had examined Mr. Renton's turnips, and no more competitors being in that neighbourhood, we had a very long ride through some very bad roads to the City of Hamilton and there took up our quarters for the night.

Ninth.—Wednesday morning we proceeded from Hamilton to the Township of East Flamboro' near the Village of Waterdown, Mr. McMonies showed two fields of turnips, about 2 acres each, one under orchard and the other in the open field; the orchard being the better crop we took our average from it. Mr. McMonies tills his orchards every year and finds his trees thrive much better than if allowed to remain in grass. His turnips were a fair crop, sown after

potatos, well manured in the spring at the rate of 10 waggon loads of barn yard manure to the acre. Nearly all Purple Tops with a few of Laing's Improved; drills 2 feet apart, very few blanks, and bulbs a fair medium size; soil a gravelly loam; 25 feet square, being a fair average of the field, yielded $11\frac{1}{2}$ bush. at 69 lbs. to the bush.

55,545lbs. $925\frac{5}{8}$ bus. per acre 60lbs. to the bus.
 " 805 " " 69 " "

Tenth.—Mr. Luke Mullock, East Flamboro, near Waterdown, showed turnips, carrots, and mangels in the same field; his turnips were a nice patch of two acres, a very fine crop and carefully cultivated; sod the previous year, manured in the Fall at the rate of 20 waggon loads of stable manure to the acre and ploughed in; soil a fine clayey loam; seed sown on the flat in rows 2 feet apart about the 12th of June at the rate of 2 lbs. of seed to the acre. Bulb. generally large and very few blanks; 25 feet square yielded $13\frac{1}{2}$ bush, at 73 lbs. to the bush.

68985lbs. $1149\frac{4}{5}$ bus. per acre. 60lbs. to the bus.
 " 945 " " 73 " "

Mr. Mullock's carrots and mangels were manured at the same rate per acre as his turnips, and cultivated in the same way. White Belgian Carrots very pure, sown in drills on the flat 20 inches apart; measured off $12\frac{1}{2}$ feet by 25 feet, produce $5\frac{1}{2}$ bush. 60 lbs. to the bush.

46200lbs. 770 bush. per acre. 60lbs. to the bus.

Examined his Mangels *Long Red*; roots pretty large, very few blanks, drills 20 inches apart; $12\frac{1}{2}$ by 25 feet yielded $7\frac{1}{2}$ bus. at 62 lbs., 65100 lbs. 1085 bus. per acre at 60 lbs. to bus.

1050 bus. per acre, at 62 lbs. to the bus.

Eleventh.—Next farm Mr. Thos. Stock's, a large field of about 10 acres; a fine piece of rolling land, clayey loam, sown after pea and oat stubble, manured with 15 waggon loads of stable-yard manure in the fall, and ploughed in drills 22 inches apart, seed sown about the 20th of June at the rate of 2 lbs. to the acre, all purple tops; bulbs average a fair size except in some parts of the field where the turnips had been affected with *lice*; 25 feet square yielded $12\frac{1}{2}$ bus. at 70 lbs. to the bus.

62,495lbs., $1041\frac{1}{2}$ bus. per acre. 60lbs. to bus.
 892 $3\frac{3}{8}$ " " 70 " "

Twelfth.—Mr. John Stock, next farm, showed a very fine field of turnips over two acres, grown after sod, manured in the Fall at the rate of 20 loads of good stable-yard manure to the acre and ploughed in—well worked in the Spring,—drills 2 feet, seed sown 12th of June, at the rate of 2 lbs. to the acre; bulbs generally large and well shaped, very few blanks, all purple tops, pretty pure; taking the average of the field and measuring off the usual space 25 feet square, the produce was $12\frac{1}{2}$ bus. at 71 lbs to the bus.

63,367lbs. $1056\frac{7}{8}$ bus. per acre. 60lbs. to bus.
 892 $3\frac{5}{8}$ " " 71 " "

Mr. Stock was also competing with *Carrots* and *Mangels*, but declining to have them examined we passed on to the next.

Mr. S. cultivates about 150 acres, and seems to have his farm in excellent condition.

Thirteenth.—Mr. H. R. O'Reilly, a piece of three acres of Skirving's purple tops, a fair crop, but bulbs rather small; sown after barley stubble, and manured in the spring with 10 waggon loads of barn-yard manure to the acre; drills 2 feet, seed sown 20th June at the rate of 3 lbs. to the acre. A square of 25 feet yielding 10 bus. at 72 lbs. to the bus.

50,400lbs. 840 bus. per acre. 60 lbs. to the bus.
 700 " " " 72 " " "

Mr. O'Reilly, competed with mangels, long red, grown alongside of his turnips—manured and cultivated in the same manner. They were thin in the drills, and a good many blanks, roots very fair size, and if it had not been for the blanks they would have been a heavy crop; we took the average from the piece about three quarters of an acre, weighed one bus. 59 lbs. measured the produce of $12\frac{1}{2}$ by 25 feet, but by an omission on taking the notes the quantity was not put down, however, we were satisfied at the time that Mr. O'Reilly's mangels did not quite come up to the others in weight, per acre. Mr. O'Reilly cultivates about 100 acres, his farm is well adapted for growing grain and root crops.

Having now finished our work of inspection, we have much pleasure in stating that we were highly pleased with all the crops that came under our notice; the general average has not been so high this year as at a former competition, owing to the very dry weather which prevailed about the time of sowing. The tendency of such competitions is highly beneficial to the country, and the results require only to be understood and appreciated by the Practical Farmers of Canada. With the above facts before us, we award the

First Prize for Swede Turnips, to Mr. Luke Mullock, East Flamboro. Second prize, Mr. John Stock, East Flamboro. Third prize, Mr. Thos. Stock, East Flamboro, Fourth prize, Mr. Thos. Hatt, Ancaster.

CARROTS.

First prize, Thomas Dunbar, Ancaster. Second prize, Joseph Webster, West Flamboro.

MANGEL WURZEL.

First prize, Luke Mullock, East Flamboro. Second prize, Thos Dunbar, Ancaster.

All of which is respectfully submitted,

JAMES FLEMING.
 JAMES CALDER.

Toronto, 1863.

EXHAUSTION OF VEGETABLE MOULD.

The means of increasing or preserving the vegetable mould is the greatest question that concerns man, while it is scarcely thought of. In the poorer soils, which include a great proportion of the more level cultivable surface of the earth, the vegetable mould is fast suffering exhaustion by aeration under the present system, and man does not seem aware of what he is about. In the Eastern States of North America from the State of Maine to Florida, in Lower Germany west of the Vistula, and in many parts of Spain and France, the vegetable mould is much exhausted, and no means taken to prevent ultimate sterility. The loss has been so great as almost to be irremediable by man, and perhaps must be left to the repairing agency of Nature, first to cover up the wasted land by a dense pine forest for a number of ages, and when, by this means, a sufficiency of mould and moisture of climate is attained for the growth of broad-leaved trees, to remain for ages more under these; or if the exhaustion is too far advanced, or the climate too dry for forest growth, the country to be again dipped for a geological period under the ocean. In most places of the American Eastern States, except the pine barrens of sheer sand, the vegetable mould, upon the clearance of the forest cover, amounts to from a foot to 18 inches of rich black vegetable mould, and this under 12 or 18 years' aeration is completely dissipated, nothing remaining but light-coloured, poor mineral earth—such as would delight the heart of Liebig or Professor Voelcker. Germany, from the Vistula to the German Ocean, with the exception of the rich river deltas, is almost equally exhausted—not only the vegetable mould lost, but even the marl and clay once existing in the soil washed away, forming the alluvions of the Rhine, Weser, Elbe, and Vistula. In the greater part of this country nothing remains on the surface within reach of the plough but sterile silicious sand, termed "geest-land," perhaps a corruption of "geist-land."

When this stage of exhaustion takes place, if the climate from position is not naturally moist, the rain clouds are not formed, or not attracted, and the region becomes arid desert. In the greater part of Germany, though adjacent to two trees, the air is becoming drier, there is less rain-fall, and the rivers are diminishing in their flow of water. This is a dangerous feature, combined with an increasing population. The only remedy is an increase of forest cover and shelter belts of trees, to encourage the formation of cloud, rain, and dew. The air in Germany is at times so dry that in the quiet, clear nights of summer there is little dew to give out heat in its change from the aerial into the liquid state, and in consequence the temperature falls sometimes at the surface of the ground in July below the freezing point,

killing the buckwheat and potatoes. In Northern Africa, and in many parts of Western and Central Asia, where man in former times had accumulated, had destroyed the forest cover, and wasted the natural vegetable mould, the country has become arid desert, animal and vegetable life extinct. There are, however, several vast deposits of vegetable mould—those of Southern Russia and Poland, the valleys of La Plata, and the Mississippi, all in the temperate zones, and suited to the white race of man, where it will be long before he is able to exhaust its great depth and richness. Volcanic land, disintegrated lava, dust and ashes, and other ejecta, will also bear a great amount of exhausting cropping. In these volcanic soils all the different mineral ingredients have been boiled in the pot together, and as the rock goes on disintegrating and top-dressings of ashes sometimes takes place, these soils afford almost everything a plant needs in continued supply. It is different with most soils consisting of ocean-drifted materials, elevated seabeds and sands, such as Western and Northern Germany, and the greater part of England. These sea-sedimentary and wave-wafted soils are generally too much of one kind of mineral—too silicious, too calcareous, too aluminous—and under aeration the small quantity of vegetable mould they may have acquired is soon exhausted, and it is long before it can be replaced.

Under the present farmer occupancy, his endeavour is to obtain a large immediate production, without regard to any deterioration, however great, of the vegetable soil. Is this a system to be continued? Is the goose that lays the golden egg to be killed? Liebig, a good chemist, but no farmer, in his discovery of the components of plants—that a small portion of these are mineral, necessary to give firmness and strength to the vegetable as well as the animal frame—has written in ignorance, at least ignoring the importance of the vegetable mould, the garnered food supply of the higher vegetables prepared by Nature in a manner, perhaps, more than anything else, showing a provision of means to end. Liebig seems so much captivated by what he absurdly terms "inorganics" (as if one constituent of an organism was more or less organic than another) as almost to recognize nothing else necessary; when the fact is, that it is the carbonic acid given out by the vegetable mould that, mixing with water supply, renders the water able to dissolve and convey these minerals to the root mouths of the plant. In the case of a heavy crop being produced by the artificial small manures so much valued by Liebig and his followers, there results a great exhaustion of the other components of the soil, not easily to be recovered.

The great importance of Liebig's discovery is the supposition, amounting to a considerable probability, that a plant nourished at an early

stage of its growth to high luxuriance by what they term "artificial manures"—what the soil may be most destitute of, and necessary to the growth of the plant—is thus enabled to extract a large quantity of carbon, ammonia, &c., from the atmosphere, and thus obtain large bulk, so that when ultimately it comes to form manure it will increase the vegetable mould. However this may be, there cannot be a doubt that these artificial manures enable the cultivator to exhaust a soil not very abundant of vegetable mould to complete barrenness.

Liebig seems in error in supposing that alternation of crops is more exhausting than a continuation of the same kind. There is something yet to be discovered as to the effect of alternation and mixed crop. A crop of mixed grasses continued to be depastured for years has also an effect not well understood. The enriching effect is especially conspicuous when the field is heavily manured with large manures previous to laying down.

A fertilizing cause, no doubt, is that the grasses are not allowed to seed, the seed consuming much more of the more valuable constituents, phosphates, alkalies, &c., than the succulent leaves. Another of the causes of the enrichment from lying out in pasture for years is that the mould is covered up from the burning and exhaling influences of the sun and air. A peculiar crumbly arrangement of the mould also takes place, favourable to vegetable growth; perhaps, also a growth of fertilizing earth fungi. The great mass of roots and ploughed down sward of leaves also serves to enrich the mould. At one time it was thought that plants threw out a refuse from their roots, and that this refuse of one kind of plant served as nourishment to another, while it was poisonous to its own kind. This idea is now given up.

It has been found that the large manures ploughed down pretty deep in the ground are more effectual in enriching the vegetable soil than when near the surface, although they do not act so quickly to forward the immediate crop. A depth and richness of the vegetable mould affords the best provision against injury by drought. It is the food supply of Nature, cooked, we may say, by Nature in the most digestible manner possible; and it is the part of the husbandman to do everything in his power to prevent its exhaustion. Liebig's vaunted artificial manures, ignorantly or improperly applied, and the scope of his lectures on the subject, have, perhaps, tended to diminish rather than increase the vegetable mould.—*Times*.

The Provincial Exhibition of Upper Canada for this year, takes place at Kingston, on the 22nd, 23rd, 24th, and 25th September.

VANCOUVER ISLAND.

The *California Farmer*, published at San Francisco, gives the following sketch of the progress of agriculture in the neighborhood of Victoria, Vancouver's Island. We cannot help thinking the picture of the productiveness of the country a good deal too highly colored.

From Mr. B. we gather the following interesting facts touching the progress of agriculture and horticulture in the British possessions. These facts should be of deep interest to us as we are neighbors, and of course their progress must favorably affect us. It has been a great mistake here to suppose that Agriculture has not made progress in that region. On the contrary, they have made great progress, and have brought industry, skill, and large capital, to second their enterprises.

At Williams' Lake, one large farm and garden has realized £6,000 or \$30,000, as the income of last year, Messrs. Woodruff & Co. At Port Pemberton, M. Nelson and other farmers, realized from \$6,000 to \$8,000 each, for hay crops. There are many other farms where great success has been the result of well-directed efforts; and there are still large and rich tracts of land where settlers are gathering and making improvements. A large region of country is here opened, where intelligent farmers may always do well, and we are informed that settlers are constantly coming from England to take up land and go to work in earnest. We hear of one instance where an English farmer has lately taken up a tract of land; he brought with him, for the purpose, £10,000, or \$50,000. This is the way English farmers embark in agriculture.

We wish our farmers, when they take hold of farming, would get a leaf out of our neighbors' books, learn a little of their system, and put a little more soul into their work—then we should not hear so much grumbling about "hard times." English and Scotch farmers, and Irish ones, generally, love to work and they *work in earnest*, to make their farms prosper. They say, farmwork first; politics, races and sports, afterwards. We wish it were so also with our farmers and stock men; it must be so to make farming really prosperous.

Lands in Victoria, that a few years since were occupied by the Indians, and of little value, are now taken up, occupied by permanent settlers, and have been greatly improved. Settlers from England have filled up the Comox and Cowichin districts, and the whole place has been greatly improved within a few months.

As an evidence of the capacity of soil on Vancouver, we will state that one farmer (Mr. Thompson) raised 100 bushels of wheat to the acre—64 pounds per bushel. This was done in Sandwich, and—who can beat it? Barley, too, yields heavy of a very superior quality weighing 54 pounds. Oats does splendidly, and it is known to be superior to any grown here. Potatoes do admirably, and, all other crops do well.

SHEEP ON THE PAMPAS OF THE RIVER PLATE.

On our Estancia we have, first in order, the Saxon sheep or "Nigratti." When the King of Saxony (in Germany) first took sheep from Spain, the greatest care possible was given to them, in order to produce an excellent quality of wool, which should contain both fineness and weight, the carcass forming a secondary consideration. In course of time it was found that as these imported Spanish sheep improved, so that their wool was the finest and heaviest to be had, they lost too much in substance and bone; hence arose the idea of making a "cross"—that is, putting these fine sheep with rams of a different breed, and fine rams with sheep of a different quality. The result was, as can well be supposed, sheep (by "sheep" I include both sexes) possessing greater bone and less fine wool than the original superior stock. The former are termed "Electoral" and the latter "Nigratti." When Mr. Pranger (a native of Bremer), the former and original owner of this Estancia, first brought the "Nigratti" from Germany to this Estancia—the first ever seen in South America—they were highly prized, and on one occasion he sold to an English Estancia a ram Nigratti, for which he received as much as £500 (English); now they average at £30 and £35 (English), and are imported by many Estancieros. From 18 to 22 lb. of wool are obtained from each.

At the proper season of the year we put a certain number of these rams in our various flocks—"Nigratti," "Merino," and "Mestizo"—and when they are no longer required for use in the flock, they are brought back to the Estancia, where they all live together, enjoying their hard-headed fights and battles, and living as well as possible. We have now about 180 Nigratti rams: every year some go off, either out of the world altogether or to another Estancia, and are succeeded by their descendants, for a new race is continually coming forth. We have about 350 Saxon sheep, in round numbers, for I can't say exactly how many.

The sheep next in worth are the "Merinos," which yield each about 12 lb. or 13 lb. of wool.

The prices of these Merinos vary; I have seen Merino rams go at £5 each and some at £10, but I have not heard of a higher rate. It is possible a higher price is obtained.

Then come the "Mestizas," giving each from 5 to 7 lb. of wool; we generally reckon four Mestizas give an arroba (25 lb.) of wool. If a person sold a flock of Mestizas (1,000) at 4 patacones (say each pt. = 4s.) each, he would be said to have done "very well."

There is another kind of sheep, called the "Rambouillet," or French sheep, which we have not got, which gives as much sometimes as an arroba (25 lb.). Mr. Grierson, whom I mentioned, has one Rambouillet ram, and I saw its wool, which I should say was 4 inches deep over the shoulders, or even more.

The sheep of the country is called the "Criolla," which also we have not got.

If possible, in purchasing a flock of 1,000, a good proportion is to have 800 sheep, 200 capones (wethers), and 10 rams in addition. 10 rams are enough for such a flock, and, in a good year, 800 or even 900 lambs can be obtained from them.

As regards sheep dogs:—If I had a flock of sheep, nothing to me would be more acceptable than a pair of good English sheep dogs. These dogs may be in El Campo de Buenos Ayres, but I have never seen one the five calendar months I have been here. A good sheep-dog is a valuable article, and, I fancy, a profitable one too. Only two or three weeks ago an Englishman who has sheep up the country asked me if we had any good sheep-dogs here, pups, and, if so, he was willing to pay for one if he could obtain it. But I could not get one for him, notwithstanding I rode to a puestero I know who has five little pups (not sheep-dogs), all of which were already bespoken.

Last week we did a little ploughing. Uncle Charles will at once think of the fine stout horses, in broad leather harness, possibly adorned with bells or tassels, with a little boy three feet high, with a long whip over his shoulder at their side, and the steady, old, sun-burned man guiding the plough as straight as a line, and fancy it is the same here. But could you only peep at us for a quarter of an hour, and then see the contrast. A greater could not possibly be, to speak a little beyond the mark.

A good fairish plough we certainly have, but see the other material. Instead of the steady, fat, and strong cart horses of old England, we have horses such as would be only used for a light gig, or riding at home, their only real intention, about 13 hands high, and never before in front of a plough, so that they are half wild at first, rearing and plunging from side to side, one tied to the other, for we have two in the plough at a time. My duty in the ploughing was to lead these un-

trained horses by the head and prevent any damage done, and no joke I assure you at the beginning, when they came fresh from the field, but at the end of a couple of hours they became tamer and reconciled to their fate. A second man goes behind them with a whip to keep them up to the mark if they fall back or rear, &c., and when it is applied No. 1 has to look out. A third man guides the plough as well as he can, and if we only have three or four great circles at the beginning we say it is "all right," and soon will be better. After an hour possibly No. 2 with the whip can be dispensed with. Now we have the difficulty with the horses, training a few in case we have a gig, and then they will draw all right; but a few lessons make a wonderful difference, after which they do tolerably well. —"J. P.," in *Agricultural Gazette*.

PATENTED AGRICULTURAL INVENTIONS

From the Canada Gazette of March 14 1863
His Excellency the Governor General has been pleased to grant Letters Patent for Invention for a period of fourteen years from the dates thereof, to the following persons, viz:—

Abimelech Hillman, Cabinet Maker, and Nathan Campbell, Furniture Dealer, both of the town of Stratford, county of Perth, for an improved Churn, to be called the "Prince Churn,"—(Dated 22nd August, 1862)

John Angell Cull, assignee of Edward Lefroy Cull, both of the City of Toronto, county of York, gentlemen, for an article styled the "Forest Cultivator,"—(Dated 6th October, 1862.)

David Allen Rose of the township of Ernestown, county of Lennox and Addington, Mechanic, for "An improvement of a Churn for making Butter,"—(Dated 10th October, 1862)

Charles Henry Wortman, of the township of Camden East, county of Addington, Millwright, for a Force and Suction Pump, called "Wortman's combined Force and Suction Pump,"—(Dated 17th October, 1862.)

John McConnell, of Cornwall, county of Wentworth, Tinsmith, for "A Shifting Hinge, Joint or coupling,"—(Dated 17th October, 1862.)

Charles Powell, of the township and county of York, Pump Maker, for "An improved Double Action Swing Force Pump,"—(Dated 14th October, 1862.)

John William Henry Schneider, of the township of Thorold, county of Welland, gentleman, for "New and useful improvements on Straw or Hay Cutting Boxes,"—(Dated 24th October, 1862.)

Richard Lewis, of Melbourne, county of Richmond, Carpenter, for "New and Improved Hanging Gates,"—(Dated 30 October, 1862.)

Elijah Glendillen, of the township of North Berkeley, county of Middlesex, Cabinet Ma-

ker, for "A Washing Machine,"—(Dated 17th November, 1862.)

Abimelech Hillman, of the town of Stratford, county of Perth, Cabinet Maker, for an improved Churn, to be called "Hillman's up and down self-acting rotatory reversible dash Churn,"—(Dated 25 November, 1862.)

Edward Lounsbury Stilwell, of the village of Klineburgh, county of York, Cabinet Maker, for "A self setting Rat Trap,"—(Dated 27th of November, 1862.)

Nathan Campbell, of Stratford, county of Perth, Furniture Dealer, for "Certain improvements on the Prince Churn,"—(Dated 29 November, 1862.)

Lewis Pannabaker, of the township of Normanby, county of Grey, Farmer, for "A Grain Cradle Finger Adjuster,"—(Dated 1st December, 1862.)

William Randall, of the township of Uxbridge, county of Ontario, Carpenter, for a new and useful improvement in Saw Mills "called, the Excelsior Saw Mill,"—(Dated 9th December, 1862.)

William Mitler, of the township of Markham, county of York, Yeoman, for "An improved geared box Churn,"—(Dated 10 December, 1862.)

Edward Trenholm, of Trenholmvile, in the township of Kingsey, county of Drummond, Farmer and Miller, for a new and improved Apparatus for cooling Grain, Coal, or other articles kept in bulk on shipboard or in stores, to be called "Trenholm's Apparatus for cooling grain, coal, &c.,"—(Dated 13th December, 1862.)

Richard Jones Sherrot, of the city of London, county of Middlesex, Carpenter, for "A Clothes Horse for airing and drying Linen or clothes within doors,"—(Dated 16th December, 1862)

Warren Millar, of the city of Montreal, Sewing Machine Agent, for "A new and useful loop check in Sewing Machines using a rotating hook,"—(Dated 16th December, 1862.)

NEW YORK STATE SHOW.—The annual Show of the New York State Agricultural Society, has been appointed to be held this year at Utica on 15th to 18th Sept.

FLAX CULTIVATION.—A meeting of some of the leading agriculturists in the neighborhood of Guelph, was recently held at that place for the purpose of discussing the question of erecting a scutching mill, and entering into the cultivation of flax on an extended scale in that section. Mr. John McCrea and gentlemen associated with him pledged themselves to erect flax scutching machinery by the first of August next, and to dress the flax in the best style and on the usual terms of payment, viz: half the value of the clear fibre to be paid either way. This be on the condition that a sufficient num

ber of farmers should guarantee to sow and cultivate properly 300 acres of flax and deliver the produce at the mills. The required guarantee however not being forthcoming, the meeting separated without coming to any definite determination.

MUNICIPAL AID IN PROCURING SEED.

In some portions of Upper Canada, last year, particularly in the Eastern and North-Eastern counties, the crops almost totally failed, so much so that there is reason to believe that many farmers in those townships where the failure was greatest, will be destitute of the means for procuring seed to sow their land this Spring. To remedy this state of things a bill has been introduced in the Provincial Parliament to enable County Councils to raise money for the purpose of buying seed; not to exceed twenty thousand dollars in any one county. The County Council to distribute the sum so raised, in such amounts as may be expedient, amongst the township Councils, and these latter are empowered to lend it to such parties as require assistance in procuring seed to sow their land. The amounts so lent are to be repaid by a special rate levied by the township councils upon the property of the persons borrowing. Should this bill become law, as it doubtless will, it will be the means of affording very important relief to many parties who have suffered severely by the dearth of last season.

HAMBURG INTERNATIONAL AGRICULTURAL EXHIBITION.

The following named Delegates have been appointed to this exhibition from the United States:—

The Hon. James A. Wright, ex-Gov. of Indiana, and late Minister to the Court of Berlin, United States Commissioner.

Hon. Ezra Cornell, of Ithaca, ex-President of the N. Y. State Agricultural Society.

Charles L. Flint, Esq., Secretary of the Massachusetts State Agricultural Society.

Ex-Gov. Dyer, from the Society for the Improvement of Agriculture and Manufactures in Rhode Island.

Hon. Daniel Needham, of Hartford, Vt., will represent the Vermont State Agricultural Society.

Hon. W. Marsh has been appointed a delegate for the State of Illinois.

Gen. N. N. Halsted, of Harrison, and Stephen H. Condict, Esq., of Newark, are appointed for the State of New Jersey.

Any persons in Canada who propose exhibiting implements or other articles, should make their applications for entry to the agents, Messrs. Austin Baldwin & Co., New York, immediately. All articles must be delivered ready for shipment by 10th June next.

The Dairy.

DAIRY MANAGEMENT.

The following report was read by Mr. Cunningham at a recent meeting of the Committee of the County of Cork (Ireland) Agricultural Society:—

“Visitors to the Munster Agricultural School Farm almost invariably put the following questions;—‘Which kind of pan is preferred? and which kind throws up the largest quantity of cream or ultimately gives the largest produce in butter?’ The first question is easily answered, as glass pans are the favourites, owing to their cleanliness and economy in management. To the second question no decided answer could be given; and with the view of eliciting reliable particulars on this point, the following experiments were undertaken. The pans selected were three years in use, and of the following kinds—glass, earthenware (black glaze), delft, tinned iron, and wooden vessels. In order to carry out the experiment with the greatest accuracy, the feeding of the cows was changed, and the temperature of the dairy varied at each experiment. The milk as it came from the cows was strained into a large vessel and then measured accurately into the pans. The quantity of milk set in all cases was eight gallons, and the cream from this was about from five to six pints. I do not set much value on the measurement of the cream, as a great deal depends upon the state of the milk and the dexterity of the dairymaid in taking it off. One week was allowed to elapse before the next experiment was commenced. In all, four experiments were made. In the first the feeding was of a rich nature, and a large produce of butter was expected, and the temperature of the dairy was high for the season, viz., 55 deg. The feeding consisted of white turnips, swedes, rape cake (three lbs. to each cow per day), grains, and hay. The expectation as to large yield of butter was realised, as two of the vessels gave the highest produce—3 lbs. of butter from eight gallons of milk. In the second experiment the temperature of the dairy was lowered to 48 Deg., and the feeding was Aberdeen turnips, swedes, grains, and hay. In the third experiment the temperature was raised to 50 deg., and the feeding was mangels, swedes, Aberdeen turnips, and hay. The temperature was 52 deg in the fourth experiment, and the feeding was mangels, swedes, grains, and hay. The pro-

duce in butter is summarised in the following table :—

Milk vessels.	Experi- ment No. 1.	Experi- ment No. 2.	Experi- ment No. 3.	Experi- ment No. 4.	Average of the four experiments.
	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.
Glass	3 0	2 10	2 12	2 14	2 13
Earthenware (black glaze)	3 0	2 10	2 12	2 14	2 13
Delft	2 14	2 8	2 10	2 12	2 11
Tinned iron ..	2 14	2 8	2 10	2 12	2 11
Wooden (casks)	2 4	2 4	2 6	2 7	2 5½

"On tabulating the 1st experiment I was under the impression that an error had occurred in the case of wooden vessels, as the quantity of butter yielded, when compared with other vessels, was very small. It was then the thought struck me to vary the temperature of the dairy and to alter the feeding of the cows, as I had not the least doubt but by so doing I would vary the quantity of butter in all the vessels, and which would tend to confirm the accuracy of the experiment, or the reverse. In the second experiment no rape cake was given to the cows, and the temperature of the dairy was lowered to 48 degs. It is a well-known fact that a low temperature has the effect of preventing the cream from rising, and this was exemplified in a remarkable degree in this trial, as all the pans, with the exception of the wooden ones, produced the smallest quantity of butter. When we consider that the materials of the wooden vessels, is less liable to be acted upon by a variation in the temperature, or, in other words, is a greater non-conductor, hence the produce of the butter remained the same as in the first experiment, while in that of the other pans the produce was lessened very much. I believe from experiments conducted during the past season at the Albert Institution, Glasnevin, it was found that rape cake did not add to the increased richness of the milk, but that it tended to bring the cattle into a higher condition, so that the absence of rape cake in the feeding does not account for the sudden decrease in butter, but that it wholly arose from the sudden depression in the temperature. I may here take the liberty of stating one or two facts with regard to rape-cake. The milk cows on the Munster Farm receive about 3 lbs. of this cake per day during the winter months, and it has the effect of counteracting in a great degree the unpleasant flavour of the turnips; so much so, that although the tops are often given with the turnips, still we have had no complaint from our numerous customers of the turnip flavour in butter. The rape cake gives to butter a closeness of grain and a soft consistency even in frosty weather, and it is by the use of this rape cake that the Belgian farmer is able to command so high a price in the London market during the winter months. In the third and fourth experiments the temperature of the dairy was gradually raised, and a higher

class of feeding was given, so that all the vessels gave a corresponding higher produce of butter. The milk turns sour or thickens in the course of from twelve to eighteen hours in the wooden vessels, and in the delft and tinned iron a few hours sooner than in glass and earthenware ones. A vessel that will keep the milk longest sweet will have more time to throw up a larger quantity of cream, a circumstance which these experiments tend to corroborate—260 lbs. of butter are considered a fair average produce for a cow during twelve months, and if we take this quantity as realized from the glass and earthenware pans there will be a loss of 9½ lbs. of butter, or 5 per cent. by using pans of delft or tinned iron, and a loss of 36 lbs., or 18 per cent. by using vessels of wood. To manage a dairy successfully, cleanliness is a most essential requisite; and dampness should by all means be avoided, as it soon taints the milk, and the butter is consequently deteriorated. Vessels that require much cleansing and scrubbing, as wood, and certain sorts of earthenware, should be at once thrown aside, as the moisture absorbed soon taints the milk, as I have had ample experience in a tour of inspection, as a judge of green crops, &c., in Kerry and the west of Ireland, where I found in dairies having vessels of wood, the milk, in all cases, was corrupted before the cream was taken off, and this more especially if the dairies were damp and not properly cleaned. The conclusion I have come to is, that glass pans have the decided advantage, that they are easily cleaned, that the milk keeps longer sweet in them, and that they give the highest produce in butter, which is of a superior quality. As to breakages, the dairymaid at this farm has just received a small gratuity for her care in managing these pans, as not one was broken during the last 18 months. I purpose continuing these experiments still further as soon as some additions to the dairy are completed, and I shall be most happy to bring the results before you.

"From a most excellent little work on dairy husbandry (which should be in the hands of every dairy farmer), by the editor of the *London Agricultural Gazette*—I shall read one or two extracts:—Captain Car, who farms largely in Holstein, and who has 180 cows in his dairy, uses almost exclusively glass pans, and he gives them a decided preference over all others. He says: 'It is self evident that acidity cannot be communicated to glass; and the ease and rapidity with which they are cleaned, requiring merely to be first washed with lukewarm water, then rinsed in cold water and placed in a rack to dry, effect a great saving in fuel and labour, diminishing the number of dairymaids by at least two.' A Mr. Duncan, of Bradwell, in England, who has a dairy on a large scale, writes thus of glass pans:—'On further acquaintance with them, I have come to the conclusion that they are the cheapest thing (even at 4s. each) that a farmer can use, for they are washed and wiped and kept

clean with 300 per cent. less trouble than other vessels.'

"The prices of the pans holding three gallons each, as sold by Mr. Sheehan, 110 Patrick street, are per dozen—glass, 54s.; delft, 72s.; earthenware, English manufacture, 18s.; and tinned iron, 42s.

"I have just received from Dr. Kirkpatrick an extract from the *Mark Lane Express*, requesting me to test the accuracy of an experiment therein contained. The experiment is thus set forth:—

"In order to determine with certainty the results of setting milk for cream in deep or shallow pans, several experiments were made with accuracy and care.

"In pans containing 1 quart the cream measured				1 gill.
Do.	do.	2 do.	do.	2 do.
Do.	do.	3 do.	do.	2½ do.
Do.	do.	4 do.	do.	3 do.
Do.	do.	5 do.	do.	3¾ do.

"The same experiments were tried twice successively with the same results. The question will readily occur, whether there would be any difference in the percentage of butter in either of the above experiments."

Horticulture.

HAMILTON HORTICULTURAL CLUB.

The following papers, recently read before the Hamilton Horticultural club, have been kindly furnished to us by the Secretary, for publication.

On the Culture and Arrangement of Annuals.

MR. PRESIDENT AND GENTLEMEN.—In accordance with your request at last meeting, I shall endeavor, hereby to make a few remarks on annuals—i. e. plants that live but one year, and consequently require to be raised from seed annually, and in doing so, I think the better way to bring forward the discussion will be to name a few of the most common, and best suited for a display in the flower-garden. It would be superfluous for me to describe at any length varieties of annuals with which most or all of you are familiar, and I shall therefore confine myself to those few which I have found most suitable for our usually hot and dry summers. There are many excellent things which cannot be grown successfully in some seasons, and in certain situations, which in other seasons in different situations will make a grand display. Some of those plants I have reference to are stocks, asters, and French Marygold, neither of which will do so well in a summer like the past, except in a moist and somewhat shaded exposure. Where-

as balsams, globe aramantus, zinnea elegans, and phlox Drummondii will do excellently in an exposure where the others would not succeed.

I. *Gomphrena Globosa*—(globe aramantus) is an excellent annual either for beds in gardens or flower borders. All should be sown pretty early, say the end of February or beginning of March in a slight hot-bed. When the plants are well up and fit to handle, prick off in shallow pans or boxes to be shifted again before planting out in the flower garden. All danger of frost ought to be over before risking the final planting out, which will be towards the end of May. The plants may be set out at 12 inches apart each way.

II. *Balsams* make a good bed in the flower garden, they may be planted as soon as all danger from frost is past, but in that case the flowering of them will not last throughout the season. I have found the balsam well adapted to plant after bulbs, such as tulips, &c. Planted from the beginning to the end of July, plants not too large but well established will bloom well throughout the autumn until the frost cuts them off.

III. *Stocks*—Although a favorite flower with many, are by some good gardeners considered unsuited for a bed in the flower garden, it is very useful for borders, and I have found this like the balsam well suited for a second crop to flower in autumn.

IV. *Asters*.—China and German belong to a class of annuals better adapted to the flower border than the bed in the flower garden, they are also recommended for pot plants in the green house or conservatory. The French varieties are recommended by Carter & Co., in their catalogue for '61, as making a very effective bed or riband by planting two or three rows of gladiolus (French seedlings for gardening) in April as a back ground or centre, as the case may be, next to which several rows of transplanted plants of French asters of separate varieties raised from seed, and for edging dwarf varieties after the same class, which will form a very lasting and showy bed for the autumn.

V. *Dwarf French Marygold*, is a plant well adapted for bedding purposes, either the dark or the orange are colors that tell well in the flower garden; and one great advantage, to some gardeners at least, is, that no lady will put a hand to it or touch it; so that when the plants have covered the ground and the bed looks gay there is no danger of its flowers being cut away for bouquets as most other things in the flower garden are subject to. Its height, color, and duration are all favorable for a bed affording dimensions, nothing in fact is against it but its disagreeable smell.

VI. *Zinnia elegans*—for a bed of pretty large dimensions is admirably adapted for the flower garden in this part of Canada; it is easily raised from seed, will plant out at any

time during May, June or July—stands all sorts of weather, until frost makes its appearance. The double form introduced a few years ago, is an acquisition, and as it gets more improved the double flowers more numerous, no doubt will become a favorite with the flower gardener.

VII. *Phlox Drummondii* has been a general favorite for several years, and of late it has been so much improved both in size of flowers, number of varieties, and compactness of habit, that it may in truth be called one of the best annuals grown, for a mixed bed or ribanding it is equally well adapted.

VIII. *Petunias*.—From the variety of color and profuseness of bloom are very effective plants for the flower garden; some of them are sweet scented, and like several sorts of annuals can be continued by cutting.

IX. *Portulacca*—is a very useful plant for small bed, edging larger ones a ribanding—plants grow close to the ground, and when in full bloom under a meridian sun the earth appears covered with their richly colored blossoms, a very useful plant for dry banks or places where very few other plants will grow.

X. *Saponaria Calabrica*.—For a bed of medium size or edging to large beds is very pretty, being of compact habit, covering the ground like chickweed, and as it flowers very profusely during the end of summer and autumn with its small rose colored blossoms, it is a very fine object for the flower garden.

XI. *Lobelia Speciosa*—is a plant of great merits, and is expected by some (Mr. Robson in cottage gardening) to attain to the number of varieties of even the verberna “when as good a scarlet lobelia is obtained as the blossom we now have, no verberna will be able to compete with it,” unless having all the good qualities and habit of the pulchella. I have grown this variety only two seasons, but in that short time it has promised to be all that its friends claim for it. The color being dark blue, almost purple, the habit unexceptionable—a profuse bloomer, showing the flowers well above foliage, and unaffected by either sunshine or rain, it must become a great favorite with the flower gardener.

XII. *Mirabilis Jalapa*—*Marvel of Peru*.—treated as an annual is a useful plant in the flower garden. Its height 2 feet, is an objection for a small bed, but for a pretty large bed or clumps in a border, it is worth a place in every garden, from the fact of its opening its blossoms in the evening when many of its neighbors retire for the night, or when the sun is hid from view. That peculiarity alone will make it a favorite with every one who in the cool of the evening delights to muse among the haunts of the flower garden. I might have added to this list of annuals a much greater number, but a selection being the object, more than a collection—and to

leave room for discussion. I trust you will pardon me for brevity.

Hamilton, Jan. 6th, 1863.

C. M.

Mignonnette; Larkspurs, various; Sanvatalea precumbens; Acrolinum roseum; Linum Rubrum grandiflora; Clarkea pulchella; Bartonea aurea; Coreopsis drummondii; Calluhoe predata; Tropæolum *Tom Thumb*; Clintonia pulchella; Escholtzia California.

The Flower Garden.

MR. PRESIDENT AND GENTLEMEN.—Although it affords me pleasure to contribute towards all horticultural pursuits, I must say, that I think your call upon me at this time, for a paper on the flower garden, is rather premature; it being much earlier than usual, and at a season very ungenial to the nature of the subject, so much so, that the writer is scarcely yet in trim. The mind of man in many respects resembles the vegetable kingdom, which at present lies dormant, divested of all its fragrance and beauty. The snow drop, our earliest of flowers, has not yet shown its welcome face—John Frost reigns king—the tingling of the sleigh bell is still heard in our streets of ice, with the curlers on the slippery surface occasionally enjoying their roaring game. John Frost during the past parts of the winter has been rather a fickle customer, sudden and uncertain in his movements, and at times hard in his bites. I fear that where there has not been good protection his evils will be felt.

In my paper to you last year on this subject, published in the *Agriculturist* for April, page 246, I noticed the new bedding system in a general way—the arrangement of plants with a due regard to colours, light and shade. Since then I am not aware of anything new having transpired, particularly commanding notice, further than the gratification I have in being able to state, that a considerable improvement was made in several arrangements of last year in this city and neighbourhood. We had neatly kept lawns, pleasure grounds and flower gardens; such things are very attractive and must be very pleasing to their owners. Not less to the humble cottagers, are their small tidy flower beds and choice hardy flowers.

As regards ribanding, panelling and making linked chains, &c., &c., of flowering plants; we cannot as yet cope with our old country friends, for we have not the material. The only thing we can do for the present is to try and make much of what we have, and live in the hope that we may see the day when we shall surprise them in our floral department, as we have already done in our fruit. I am quite sure that there is both taste and knowledge amongst the gardeners and amateurs to manage this matter if they

will only try. It is true we have not the fine large pastures, long avenues and serpentine walks, borders and figures to operate upon, that they possess in the old country; but we here many neat well got up places, although small, most creditable to their possessors, whose comfort and pleasure is in their being well kept, and this depends upon the industry, the care and attention of their gardeners. Although the places, borders and beds be small, the riband principle may, in a minute way, be carried out successfully so as to have a very good effect. Every man has a taste of his own, and in carrying out his ideas ought to exercise his own judgment, and endeavour, as far as lies in his power, to excel his neighbours.

Begin preparations now, look carefully after the bedding out of plants for the coming season, propagate as much as you can, especially in new things and of what good things you may have least of; and endeavour to have all things in readiness by the time of planting.

From the stock of plants in store, and the exertions which no doubt will be made, I feel assured that the ladies would look forward to the coming season for a fine display of new ribbons and other nice things in the floral way. Not long ago, I heard it remarked that few in Hamilton had seen this new bedding system properly carried out; this may be very true, nevertheless I maintain, that every practical gardener who has read the *Gardener's Chronicle* or the *Cottage Gardener*, where it has been very fully described, cannot but know the mode. If he understands the nature and culture of plants, and is capable of discerning one colour from another, he cannot fail in carrying it out.

Mr. Fleming, Seedsman and Florist in Toronto, has, through the columns of the *Agriculturist* been entertaining us with his Horticultural Notes, made during his tour last summer in the old country. He particularly notices the ribanding systems "grouping" he calls it—see the *Agriculturist* for January of this year, page 27, where he gives a list of plants and colours suitable for the purpose. It is to be hoped he has brought home such as he did not possess when he left Toronto, and that by this time he has largely increased their numbers and is now able to supply his numerous customers.

Excellent new varieties of bedding plants are being yearly produced in England and elsewhere—our Canadian nursemens and florists ought to endeavour to obtain as many of them as they possibly can. There is in this no doubt a considerable risk, and sometimes serious loss; such consequences must be submitted to, as there is no way of avoiding them. The wealthy portion of the community, possessing taste, would be sure to possess them at the first, and afterwards they would

become general. Mr. Bruce of Bruce & Murray in this city, and Mr. Fleming, of Toronto, had both importations of new bedding plants last year. I have seen in their nurseries some gold and silvered geraniums, and several of the other new varieties; they may wish to keep them in a corner for a time, but like the Highlandman, they will be out.

It would be well if our nurserymen, florists, and gardeners would turn their attention to hybridizing, by which means new varieties would be obtained at home. There is nothing particularly difficult in the matter, and if they would only begin and persevere there can be no doubt of success.

I would also notice that some exertions should be made this year, to discover amongst our native plants, those best adopted for bedding purposes; a good number may be found and made to answer the end. Let this be properly looked into during the summer season, and it may be that a good collection will be obtained sufficient to form a nice border. For such a collection there would be a great inducement to some of our very liberal special prize contributors to offer a handsome prize.

Had time permitted, I fully intended to have laid down before you diagrams illustrating my own ideas on the bedding system, but this I must forgo at present.

GEORGE LAING,
Landscape Gardener.

Hamilton, Mar. 3rd, 1863.

GARDEN MEMORANDA.

The delightful and busy season of spring having arrived, the following hints relative to the culture of the principal garden crops will be found useful. They are taken from this year's Descriptive Catalogue of JAMES FLEMING & Co., Seedsman, of this City.

Brief Hints on Sowing Seeds, Transplanting, Watering, Insects, &c.

SOWING SEEDS.—Warmth and moisture are essential, and seclusion from light is favorable to germination. The first care in sowing seeds should be to choose suitable ground, the proper season and state of the earth, and then to place them at such depth beneath the surface as will ensure the requisite supply of moisture. In general all seeds should be covered more or less according to their size and the advance of the season; late sowings require to be covered the deepest. The smallest seeds ought to be sown very shallow, in fine earth, and rolled or beaten firmly with the back of a spade.

The freshest seeds of some kinds often fail, from unseasonable and improper management in sowing, and other circumstances affecting their vegetation. When sown too early or too

deep while the ground is cold, wet, and heavy, they are apt to rot; when sown too shallow, in a dry time, and late in the season, there may not be sufficient moisture to sprout them, or they may be dried up by dry winds or a hot sun after they have germinated. Sometimes insects destroy them before or immediately after their appearance above ground, so that the complaints occasionally made by the inexperienced are not always to be attributed to the quality of the seeds.

Soaking in warm water twenty-four or forty-eight hours, and then rolling in plaster or ashes will very much hasten the germination and growth of hard and dry seeds. It will give the plants a start of the weeds, and lessen a good deal the labour of cultivation.

To Prove Seeds, place a few in a pot of earth and keep it warm and moist. Onion seed tied in a cloth and put first into cold water and boiled half an hour, will sprout in that time if it is good.

Transplanting should be done just at evening, or immediately before or soon after a rain. Make the holes with the *dibble*, hold the plant in one hand, and with the other bear the point of the dibble into the ground by the side of it, and press the earth closely to the *bottom* of the root, taking care not to bury the heart of the plant. Give each plant a gill of water about the root, and shade with a shingle in sunny weather.

Watering.—The best time to water plants is at sunrise or just at evening, and always use rain water when to be had. If well water must be used it should be exposed to the sun a day or two, until it rises to the temperature of the air, before it is applied. Water may be given to the roots at any time, but never should be sprinkled over the leaves in a hot sun.

Thinning is a very important operation. Everything ought to be thinned very early, even in the seed leaf if the plants stand too close. Another thinning may be necessary when they are more advanced, to give them room to grow stocky. All plants when crowded together, run up tall and slender; such never succeed so well.

Hoeing and Weeding.—It ought to be remembered that it is easiest to kill weeds when they are small, and that it is better to hoe for this purpose soon after, rather than immediately before, a rain. It ought also to be remembered that Cabbage, Cauliflower, and Broccoli, require *deep*, and that Onions and Turnips require *shallow* hoeing; that Beets, Carrots, and Parsnips will put out side roots and grow scraggy if hoed deep after they are nearly grown; and that *earthing up* is more proper for fibrous than for carrot-rooted plants.

The Rotation of Crops ought to be regarded in planting a garden. Fusiform or carrot-

shaped roots should follow fibrous-rooted ones, and every succeeding crop should be as dissimilar to the preceding one as possible. Onions are an exception.

Frost.—Plants are more likely to be injured by frost in a moist than in a dry atmosphere, and immediately after the ground has been worked. When frozen, plants may sometimes be preserved from destruction by a copious watering in the morning, before they are exposed to the sun. In the spring and fall, when frosts are to be expected, look out for a severe one the first night after the clearing up of a rain storm, with the wind changing to west or northwest.

Insects are troublesome and sometimes very destructive. Plaster of Paris, snuff, ashes, or soot sifted on Cucumbers and Squashes when wet with dew, is very useful against the *striped bug*. Lime, road dust, ashes, or snuff, scattered over young Cabbages and Turnips, will sometimes prevent the ravages of the *black fly*. Rolling the ground after sowing, answers a good purpose, but the best preventive is a thorough sprinkling of the plants just at night with whale oil soap suds, in proportion of one pint of soap to seven and a half gallons of water. This will kill *cabbage lice* and all other *aphides*. It is sure death to all tender insects when forcibly applied with a garden syringe or rubbed on with a brush. For the want of the whale oil soap, strong soft soap suds may be used. Salt is sometimes sown in the drills with onion seed to drive away the *grub*. Fine salt strewn broadcast over Cabbages is the best application we know of for destroying the little *green cabbage worm*. Ducks, chickens, and toads destroy a host of insects, when suffered to inhabit the garden.

ASPARAGUS.

Large Giant.

CULTURE.—Asparagus beds should be well drained, by a layer of stones, oyster shells, or bones, on which lay brushwood cuttings and some turf. On this make the bed of sandy loam, stable manure, and coarse sea or river sand, (but avoid yellow or brown sand containing iron). Lay this on the drainage bottom two feet thick, then put the roots on it, in rows eighteen inches apart, and a foot apart in the rows, cover four inches with same compost. Before Winter cover the bed with leaves and manure about four or six inches. In Spring, fork in the manure slightly and give a good dressing of salt.

ENGLISH BROAD BEANS.

Broad Windsor, Taylor's Windsor, Monarch Long Pod, Early Mazagan.

CULTURE.—*Broad* or *Windsor Beans* do not succeed well in this climate, the coming on of the summer heat causes the blossoms to drop off, which prevents them from setting. The best soil to grow them in is a rich stiff clay, and on a

northern border, shaded from the mid-day sun. Sow in drills two feet apart, the drills two inches deep, and the seeds three inches apart.

DWARF, SNAP, OR BUSH BEANS.

Dwarf Yellow Six Weeks, Dwarf White Speckled, Dwarf Red Kidney, Dwarf Black Speckled, Royal Dwarf, Dwarf China, Pink Eye.

CULTURE.—*Kidney* or *French Beans* may be planted any time in May, in drills, two inches deep, the beans two inches from each other, the drills about eighteen inches apart. If a regular succession is required, sow a few every few weeks from the 1st of May to the 1st of July.

RUNNING OR POLE BEANS.

Lima or Butter Beans, Scarlet Runners, Black Algerian, White Dutch Case Knife, Red Cranberry, White Cranberry.

CULTURE.—All described under this head require poles eight or ten feet long. They are planted at the same time with the dwarf beans, and like them, require a warm, mellow soil. Stick the poles three feet apart each way, raise a hill, and plant around them six or seven beans; cover one inch deep with light, mellow earth.

BEEET.

Fleming's Selected Dwarf, Extra Long, Long Blood, Early Turnip-Rooted.

CULTURE.—*Blood Beet*, *Long* and *Turnip* may be sown in a good, rich, deep soil, about the first week in May. Draw drills about a foot apart, and one inch deep; sow moderately thick; when the plants are up strong, thin them out the distance of six inches from each other in the rows.

BORECOLE OR GREENS.

German Greens, Scotch Greens, Egyptian Kail, Dwarf Canada Kail.

CULTURE.—This is the general term for that class of the Cabbage tribe which do not head, but are used for greens in their open growth. Sow in seed-bed about the middle of May, and when of suitable size, transplant to eighteen or twenty inches apart each way, and cultivate like Cabbages.

BROCOLI.

Early Purple Cape, Early White Cape, New Walcheren, Brussels Sprouts.

CAULIFLOWER.

Extra Early Paris, Half Early Paris, Late French, Early London, Le Normand, the finest variety in cultivation, very large, frequently weighing from 12 to 14 lbs.

CULTURE.—*Brocoli* and *Cauliflower* require a deep rich soil, of a clayey nature, and highly manured. To produce early Cauliflower or *Brocoli*, the seed ought to be sown in a hot-bed early in March. When the plants are quite strong and hardy they may be planted out in the garden about the middle of May. Plant in

rows two feet square. The kinds that will do well in this climate are the Early London and French Cauliflower, Purple Cape and Walcheren *Brocoli*.

CARROT.

Early Scarlet Dutch Horn (for forcing), Early Scarlet English Horn, Long Orange, Fine Selected Altringham, French Intermediate, Half Long Scarlet, Red Altringham, Red Surrey, White Belgian (for field culture).

CULTURE.—The most suitable ground for growing Carrots is a deep, rich soil that has been well manured the previous year. Sow any time in May, in drills one foot apart and one inch deep. When the Carrots are up, thin them out four inches apart, and keep the ground free from weeds. The kinds that are generally sown in gardens are the Early Horn, Long Orange, and Red Surrey; for field culture the White Belgian and Altringham. The produce of one acre of Field Carrot, when properly cultivated, may be rated at from 800 to 1000 bushels. In cultivating them on the field system, the drills ought to be two feet apart, and the Carrots thinned out at least 12 inches apart.

CABBAGE.

Early York, Large York, Large Drumhead, Flat Dutch, Early Battersea, Savoy, Green Curled, Savoy, Cattel's Dwarf, Savoy, Large Cabbage, Savoy, Marcilen, Sugar Loaf, Carter's Matchless, Enfield Market, St. Denis, (fine winter), Late Quintal (fine winter), Shilling's Queen, (fine winter,) Winningstadt (large summer), Early Dutch (fine small variety), Red Dutch, (for pickling), St. John's Day, (Early Drumhead,) St. John's Day, (Late).

CULTURE.—*Cabbage*, both early and late, may be sown any time in May. The best situation for raising the plants is a rich, damp piece of ground, partially shaded. Seed sown in a situation of this kind is not so subject to be destroyed by the black flea. When the plants are strong they may be planted out in rows and managed the same as directed for Cauliflower. The best kinds for summer use are the Early York, Large York, and Winningstadt; for winter use the Drumhead, Flat Dutch, Quintal, and St. Denis.

CELERY.

White Solid, Seymour's Superb, Cole's New Crystal, Red Solid, Cole's Solid Red, Cole's White (superb).

CULTURE.—This vegetable is much esteemed as a salad. It requires considerable attention to grow it to perfection. To have early celery, the seed requires to be sown in a hot-bed in the month of March; for winter celery, the seed may be sown any time before the middle of May. Sow on a small bed of fine rich earth; beat the bed down with the back of the spade; sift a little fine earth over the seed; shade the bed with a mat or board until the plants begin to appear. Celery plants ought to be picked

out into a nursery-bed as soon as they are two or three inches high. Cut the roots and tops a little before planting; water them well and shade them from the sun until they begin to grow. Let them remain in the nursery-bed about one month, after which they will be fit to transplant into the trenches. The best sort of soil to grow celery in is deep rich loam, and in an open part of the garden. Mark out the trenches a foot wide and three feet between each trench. Dig the trenches one foot deep, laying the earth equally on each side. Put three or four inches deep of well-rotted manure into the bottom of each trench; put a little of the surface soil over the manure; dig it well up, incorporating the soil with the manure; dress the plants by cutting off the long leaves and the ends of the roots. Plant in single rows along the centre of each trench, allowing six inches between each plant. Water them well, and shade them from the sun until the plants begin to grow. In earthing up celery great care should be taken not to cover the heart of the plant.

CUCUMBER.

Long Prickly, Short Prickly, Early Frame, Long Ridge.

Also, the following choice varieties for frames.

Sir Colin Campbell, Manchester Prize, Sagg's Royal Exhibition, West India Gherkin, English, Prize Fighter, Conqueror of the West, Sion House, Long Southgate.

CULTURE.—*Cucumbers* may be sown in the open air any time in May. They require a good rich soil. Sow in hills four feet apart, leaving only three parts on each hill. The cucumber and melon vines are liable to be attacked by a yellow fly or bug. Soot, charcoal dust, and soap suds, applied to the plants will assist in keeping them off.

ENDIVE.

Green Curled, White Curled.

CULTURE.—Is a hardy annual, cultivated principally for a wintersalad. It is also used in stews and as garnish for the table. Sow from late in the spring to the middle of summer, in shallow drills fourteen inches apart; thin the plants to one foot in the drills, and, when fully grown, tie over the outer leaves of a few plants every week or fortnight, in dry weather, to blanch, which takes from one to three weeks. Draw up a little earth to the base of the plants. Rich, mellow soil, in an open situation, is most suitable.

EGG PLANT OR GUINEA SQUASH.

The Egg plant is a very tender vegetable, requiring a hot-bed to bring it to perfection. *Early Long Purple.*—The earliest and most productive. Fruit long and superior quality. *Large Oval Purple.*—This variety is more generally cultivated. It grows to a large size, oval shape and dark purple colour. There is a prickly and a smooth stemmed sort. The prickly grows the largest, and Smooth Stemed is the earliest.

CULTURE.—Sow in hot-beds early in the spring, and transplant to two and a half feet apart each way in very rich warm ground. Draw earth to the plants as they advance. For the want of a hot-bed, the seeds may be sown in window pots early in spring, or later, on a warm, light bed, and in a sheltered part of the garden.

LEEK.

Large Flag, Musselburgh.

CULTURE.—Sow very early in spring, in drills six inches apart, and one inch deep. Thin out to one inch apart, when they are about seven inches high, plant them out in rows eight inches apart and as deep as possible not to cover the centre young leaves. Water them thoroughly if dry weather when planted out. Draw earth up to them as they grow. Require very rich soil. Take up and store away before winter.

LETTUCE.

White Paris Cos, Green Paris Cos, Simpson's Early [for forcing], Curled Silesia, Victoria Cabbage, Malta or Drumhead.

CULTURE.—*Lettuce* is easily raised from seed, which may be sown from the 1st of April to the end of June. If good headed Lettuce is wanted, the plants should be transplanted out on a rich piece of ground in drills, twelve inches apart, and six inches in the drills. The Malta or Drumhead and Victoria College are the most suitable kinds to sow, as they head without tying up.

MUSTARD.

White.

MUSK MELON.

Fine Green Fleshed, Fine Scarlet Fleshed, Minorca, Nutmeg [fine], Pine Apple, Yellow Cantelupe, and several other choice sorts.

WATER MELON.

Long Island, Orange, Ice Cream, Mountain Sweet, Citron Melon [for preserving].

CULTURE.—*Musk and Water Melons* may also be sown at the same time, taking care to sow the different kinds a good distance apart from each other, as they are apt to mix. Plant in hills, six feet square, leaving only three plants on each hill. When the plants have grown about six inches, stop or pinch out the top of the leading shoots, which will make the plants throw out lateral shoots, on which you may expect to have fruit.

NASTURTIUM OR INDIAN CRESS.

CULTURE.—Sow in May or early in June, in drills about an inch deep. The tall kind near fences or poles on which they can climb and have support; if left to trail on the ground, the fruit is apt to be injured.

OKRA—GOMBO.

Improved Dwarf Green, Long Green.

CULTURE.—Plant late in spring, after the ground has become warm, in drills three feet apart, where the plants are to remain. Thin

out to nine inches. Hoe, and draw up earth occasionally to the stems.

ONION.

Large Pale Red, Wethersfield Large Red, Large Yellow, Danver's Yellow Early, White Silver Skinned.

CULTURE.—The yellow and large red are the best for a general crop. The ground for Onions should be well prepared, by digging in plenty of well-rotted manure. The seed may be sown from the middle of April to the middle of May. Sow in drills one inch deep and twelve inches apart. When the young Onions are up, thin them out to the distance of three inches apart.

PEPPERS.

Large Red, Cherry, Small Red.

CULTURE.—Sow early in hot bed, or in open ground in a seed bed, about the middle of spring, in light warm ground. When three inches high, transplant to eighteen inches apart each way; hoe frequently.

PARSLEY.

Curled, Double Curled, Myat's Matchless [for garnishing].

CULTURE.—Soak the seed a few hours in lukewarm water, and sow early in spring, in drills an inch deep and one foot asunder. Thin out the plants to four inches apart. To preserve in winter, remove some plants and set them in a light cellar.

PARSNIP.

Dutch Hollow Crown, Student [new and scarce], Long Smooth White.

CULTURE.—*Parsnips* require a deep rich soil. Sow in drills, one inch deep, and the drills 15 inches apart. Cultivate the same as directed for Carrots.

PUMPKIN.

Common Field, Cheese, Mammoth.

CULTURE.—May be planted middle of spring, amongst the Indian Corn, or in the field or garden, in hills eight or ten feet apart each way, with four seeds in a hill. In other respects, are cultivated in the same manner as melons and cucumbers; but avoid planting them anywhere near either of those.

PEAS.

Fleming's Extra Early, Daniel O'Rourke, 2½ feet high, Early Frame, 4 feet high, Early Kent, 2½ feet high, Bishop's Long Podded, 1½ feet high. **For general crops**—Champion of England [very fine], 4 feet high, Harrison's Perfection, 2 feet high [White], Harrison's Glory, 2 feet high [Blue], Napoleon's Dwarf, 2 feet high [Blue Wrinkled], White Marrowfat, 5 feet high, Missouri Marrowfat, 3 feet high, Waterloo Marrow, British Queen, White Sugar Peas [eatable pods].

CULTURE.—A light dry soil, not over rich, suits the Pea. If they grow too vigorously, and

show no sign of bloom, run a spade along about eight inches from the row straight down, and thereby root prune them. Do this each side of the row, and they will bloom in a few days. Plant as early as the ground can be worked, and again every two weeks for succession through the season. Plant in single or double rows from four to six feet apart, according to the different heights, about an inch apart in the row, and three inches deep; hoe often. In dry weather Peas should be soaked in soft water five or six hours before planting, and if the ground is very dry, it should be watered in the hills.

RADISH.

Early Frame [Wood's], Scarlet Short-top, London Particular, Black Spanish, Long Salmon, Scarlet Turnip, White Turnip, Rose Olive Shaped.

CULTURE.—*Radishes* should not be sown in the open air sooner than the middle of May. They require a deep, sandy soil, that has been well cultivated and manured the previous year.

RHUBARB.

Scarlet, Myat's Victoria, Giant.

CULTURE.—Sow in drills an inch deep. Thin out to six inches apart. In the fall, trench a piece of ground and manure it well; then transplant the young plants into it, three feet apart each way. Cover with leaves or litter the first winter, and a dressing of course manure should be given every fall.

SQUASH.

Acorn, Canada Crookneck, Winter Boston, Custard Marrow, Early White Scallop, Early Yellow, Hubbard [Winter].

CULTURE.—Plant in hills, as Cucumbers and Melons; the Bush three or four feet apart, and the running kinds from six to nine.

SPINACH.

Round, Prickly.

CULTURE.—*Spinach* is a useful vegetable, and very hardy. S ed sown in the month of September will stand over the winter, and come in for early greens in the spring. For summer use, seed of the round Spinach may be sown from May to July. It requires a rich soil. Sow in drills one foot apart.

SALSIFY, OR VEGETABLE OYSTER.

CULTURE.—*Salsify* is an excellent vegetable. The roots, when properly cooked, resemble oysters in flavour. The seed may be sown from the first of April to the middle of May. They require the same kind of soil and cultivation as directed for Carrots.

TOMATO.

New Upright [Is a new variety from France, said to be entirely different from the kinds previously known, its stem is 2 feet high, or more, quite upright, and so remarkably strong and stiff as to be strictly self-supporting]. Early

French [very fine], Large Yellow [very tender], Pear Shaped [fine for preserves], Feejee Island [new, splendid], Large Smooth Red [best for general crop], Red Cherry [for pickles], Yellow Cherry.

CULTURE.—For early crops sow the seed in a hot-bed in March; when two inches high, transplant into pots or into another bed, and attend to them carefully until all danger from frost is past, then plant them in a sheltered situation, fully exposed to the sun; support them with bush to keep the fruit off the ground. For general crops the seed may be sown in the open ground, end of April, and transplant into hills four feet apart. This is a vegetable worthy the most extended cultivation.

MUSHROOM SPAWN.

CULTURE.—Mushrooms can be grown in cellars, sheds, stables, or in any other such building where they will be protected from rain. During the months of October and November collect from the stable daily the fresh droppings, throw them into a heap and turn frequently to prevent it from heating violently. When the quantity of one, two or three loads, (according to resources,) has accumulated, and has lain in a heap for two or three weeks, and the fiery heat and rank steam of the dung are gone off, it is ready for use. A bed four feet wide, by twelve feet long, will give an ample supply for a moderate-sized family. Throw out the earth about six inches deep; in the trench lay four inches of good dung, not too short, for forming the bottom of the bed, then lay on the prepared dung six inches thick, regularly over the surface, beating it down firmly with the back of the fork, put on other six inches, and so on until eighteen or twenty-four inches thick. In that state it may remain about two weeks, during which time the heat should be examined about the middle of the bed, by thrusting a small stick in several places, and when found in a very mild heat, the bed may be spawned. The spawn brick for this purpose should be broken regularly into pieces about two inches square; plant them about two inches below the surface, and six inches apart. After spawning, level the surface with the back of the spade, beating it gently, after that it may be earthed—that of a sandy, loamy nature is the best; lay it on two inches thick, level it neatly with a rake, and beat it closely and evenly. When the whole is finished, the bed must be covered a foot thick with good clean straw; cover it in severe weather with mats. In about five weeks, if the bed be under proper cultivation, mushrooms will make their appearance, and in two days more they will be of a sufficient size for use.

PRICES OF NEW DAHLIAS.—the following high prices have been given by members of the nursery trade to amateurs who were so fortunate as to raise new varieties of merit:—Beauty of Teffont was the first that commanded a high

price; this variety was raised by the Rev. S. B. Ward of Teffont, in 1835, and was purchased by the Messrs. Brown for £60. Yellow Defiance, purchased by the same firm at £200, the highest amount, we believe, ever given for a dahlia; it was sent out in 1840. Essex Triumph, raised in 1841, was sent out in 1843 at £60. Marchioness of Ormond, £105. Shylock, Beeswing, Alice, and Cleopatra, for £100 each. Lady Sale, £70. Nonpareil, Sir John Richardson, Duke of Wellington, Bob, Sir R. Whittington, and British Queen, £50 each. And Queen Victoria came out in 1853, £105. We have not heard of such prices being obtained since.—*Scotish Farmer.*

Veterinary Department.

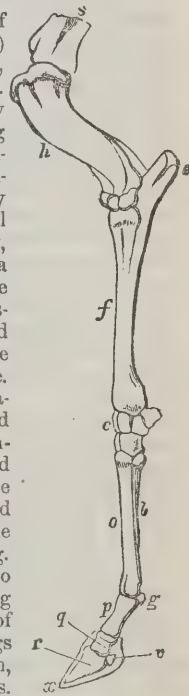
THE HORSE.

Continued from March No.

The remaining bones of the fore extremity are (R) the Os Pedis or Coffin bone, and (V) the Navicular bone.

The Coffin bone is very irregular in form, being hard and porous, and is divided into wall, sole, tendinous surface, articulatory surface, and wings, the wall is the semi-lunar, convex, part in front, presenting a number of perforations, the larger ones are for the passage of bloodvessels and nerves, the smaller for the attachment of the laminae. The sole is slightly excavated, and to it is attached the vascular sole. The tendinous portion is situated immediately behind the sole, and to it is attached the tendon of one of the flexor muscles of the leg. The wings consist of two protuberances projecting from the posterior part of the wall, each of the wings are divided by a notch, forming two processes. The superior one is called the Basilar process, to which are attached the lateral cartilages. In some horses these cartilages become ossified and are known as sidebones.

The Navicular bone (V) is situated behind the coffin bone, and with it forms the navicular joint; it presents two surfaces, two borders, and two extremities. The superior surface is smooth, the inferior rough and covered by fibro cartilage. This bone acts somewhat in the manner of a pulley, over which pass the tendon



of the flexor pedis perforans. The fibres of the tendon are very apt to be lacerated at this part, inflammation sets in, which is transmitted to the joint, and in many cases gives rise to severe lameness,—this disease is known as Navicularthrit, and is of most common occurrence in horses with short, upright pasterns, and out-turned toes, as in them the distance between the insertion of the tendons and the navicular bone is so short, and the angle formed so acute, that the tendon is exceedingly liable to be ruptured. Covering the sensible structure is the Hoof (X). The hoof of the horse represents a sort of box or casement, which envelops the inferior extremity of the digit applied in a very exact manner to the sensible foot, and united to it by elevations and depressions which fit into each other. By maceration the hoof is divisible into three parts, viz.: the wall, sole and frog. The wall, also called the crust, is the part visible when the foot is on the ground, highest anteriorly at toe, decreasing as it proceeds backward. At the posterior part the wall takes a sudden inflection inwards, at an acute angle, continued to the centre of the foot, where it unites with the sole the angle of reflection receives the name of heel, the portion inflected is called the bars. The external surface of the wall is smooth, and consists of a cuticular covering continuous with the coronary frog band. The internal surface of the wall presents throughout its whole extent parallel plates or laminae, between which are received plates of a similar form.

The superior or coronary surface of the wall of the hoof presents a groove sloped downwards and inwards, forming a gutter in which is lodged the coronary ligament or substance. The inferior surface of the wall is in contact with the ground, and is the part to which the shoe is attached.

The sole is the thick plate of horn between the inner circumference of the wall and bars, occupying the inferior portion of the foot—the external surface of the sole forms a sort of vault more or less concave—the internal surface is smooth, presenting numerous minute orifices, into which are inserted the vascular papillae of the sensible sole.

The Frog is a mass of horn of a somewhat triangular shape, placed between the bars. The inferior surface presents a triangular cavity called the cleft of the frog: the superior surface, like the sole, presents numerous orifices into which are received the vascular portions of the fatty frog. Passing round the superior surface of the wall from the heel is a broad thin band called the coronary frog band; this band serves to unite the cuticular covering of the wall with the coronary substance. The coronary substance or ligament occupies the concavity on superior surface of the wall. This substance is made up of a fibro cartilaginous band united to the coffin bone by dense cellular tissue. Resting on this cartilaginous band is

a plexus of bloodvessels, the whole being covered by a cuticular coat covered with small villi, which enter into pores in the superior surface of the wall. In continuation of this substance are the sensible laminae, which are united to the coffin bone through the intervention of a dense fibrous membrane in which ramify the bloodvessels. The laminae consist of about five hundred parallel folds, and cover the whole circumference of the pedal bone. Each of the sensitive laminae is received between and firmly attached to two of the horny laminae situated on the internal side of the wall of the hoof.

The laminae are continuous at the toe with the sensible sole, which is made up of a very elastic vascular membrane and covered with a cuticular coat possessing villi which penetrate into the sole of Os Pedis.

Occupying the posterior and centre part of the foot is the fatty or sensible frog, which is bounded superiorly by the tendon perforans, laterally by the lateral cartilages, inferiorly by the horny frog, and in continuation with the sensible sole and coronary substance. The fatty frog is made up of, first of a thick layer of soft, greenish, elastic substance above, which is a plexus of bloodvessels, and also fibro cartilage, and lastly the cuticular covering with its vascular villi.

The horn constituting the hoof presents a fibrous appearance, most distinct in the walls. This substance is made up of minute tubes united together by an intertubular substance composed of cells; these tubes are secreted from the vascular villi of coronary substance, sensible sole, and frog.

THE IMPROPRIETY OF PURGATIVES IN SOME CASES OF ABDOMINAL INFLAMMATION.

By HUGH FERGUSON, V. S. to the Queen, Veterinary Professor to the Royal Agricultural Society of Ireland.

There is an abdominal inflammation in which purgatives render the symptoms much more aggravated, and frequently induce death in cases which would recover under an opposite mode of treatment. The affection alluded to is peritonitis, or inflammation of the lining membrane of the abdomen, the outer covering of the stomach intestines, liver, spleen, and other contents of the cavity. It is frequently mistaken for colic or gripes, perhaps from constipation, or for ordinary inflammation of the bowels. Purgatives are administered; and instead of getting better, the case gets worse. The reason it does so, as an effect from purgative medicine, is very simple, though it has hitherto escaped the notice of veterinarians. The affected membrane in its healthy state is very smooth on its surface, which is lubricated with a moisture. This, by diminishing the friction between the different parts coming in contact with and gliding past each other, in

the movements of the intestines during the process of digestion, prevents any mechanical injury from one part of the membrane rubbing continuously against some other. Once this surface becomes inflamed, the more it is exposed to friction the greater and more persistent will be the inflammation. Therefore, any measure that causes an increase of movement in the intestines, such as the action of purgatives, only aggravates the evil instead of remedying it. In cases of inflammation of this membrane, the object should be to diminish the movements of the intestines, instead of increasing them. By treating the case on this principle, the inflamed membrane is less exposed to the irritating effects of friction to its surface, already rendered highly sensitive by diseased action, and a greater chance is thus given for recovery. Instead of purgatives, opiates should be given. The former medicines should not be given until the acute inflammatory stages of the membrane shall have had completely passed away.

The chief symptoms by which this inflammation of the lining membrane of the abdomen can be distinguished from gripes, colic, and ordinary inflammation of the bowels are, that the affected animal does not knock itself about, nor roll over from side to side; the pain does not come in paroxysms, but is persistent; the belly is sore to pressure; the pulse is quick, and, in the early stages, hard to the finger.

The writer's object is to explain the injurious effects of purgatives in such cases—not to enter into a dissertation on all the other measures necessary in conjunction with opiates or other medicines producing similar effects.

ANSWERS TO CORRESPONDENTS.

R. W., WHITECHURCH.—“Please give me your advice on the following case. I have a horse about ten-years-old that now and again for some time past, has had what appears to me to be inflammation in the eyes, sometimes in one eye which will get suddenly better, and in a short time the other eye becomes affected, the eyelids are swollen accompanied by a discharge of watery matter.” We consider your case to be one of Specific Ophthalmia or moon blindness, and in all probability will terminate in partial or total loss of vision. This disease is notoriously hereditary, and is also engendered by impure air and foul stables. As regards treatment, give a dose of laxative medicine, apply poultices to the eye, if there is much fever use small doses of extract of belladonna, and colchicum, place the animal in a comfortable well ventilated and darkened loose box, and at the same time allow soft and nourishing food.

H. W., SCARBORO.—“A cow of mine has been ailing for sometime and is becoming greatly emaciated, her left side appears swollen and feels hard when pressed, appetite is also al-

most gone and she appears dull and stupid, and shows a great disinclination to be moved.” Your cow appears to be suffering from distension of the Rumen or Paunch, caused by indigestible food. Give large doses of purgative medicine, combined with stimulants, encourage her to take plenty of liquids, and also give injections of soap and water.

ERSON'S WORM POWDERS FOR HORSES AND DOGS.

The horse and the dog, sharers in our imperfect civilization, are also participators in most of “the ills to which *human* flesh is heir”—ills which apparently arise out of that civilization, but, in reality, spring from our inability to make surrounding circumstances harmonise with the inflexible law of nature. The progress of science and social improvement is helping us gradually out of this awkward dilemma, but in the mean time, the diseases occasioned by this transitory condition must be encountered and overcome; and our best thanks are due to those who aid us in combating those diseases, whether in man or beast.

The Parasites which infest our domestic companions—the horse and the dog—are eight or nine in number, and their expulsion has been a task of no ordinary difficulty to the veterinary profession. Happily, of late a new remedy of singular efficacy has been brought under the notice of the public. “Erson's vermifuge powders for horses and dogs” have superseded all other remedies for this purpose, owing, doubtless, to the rapidity and certainty with which they perform the office of scavengers, and clean off all the noxious matters contained in the bowels, poisoning the worms at once, or wounding them till they die, and become no longer able to resist the purgative action of the medicine, which carries them completely out of the system. We do not pretend to know what ingredients are employed in these celebrated powders, but experience proves them to be safe and harmless in their mode of operation, and they possess one other merit which no other powders can boast of, viz. that of improving the digestive powers of the animal, and thus preventing the reproduction of the worms, after a cure has been effected.

Domestic.

Ox=Check Soup.

INGREDIENTS—An ox-cheek, 2 oz. of butter, 3 or 4 slices of lean ham or bacon, 1 parsnip, 3 carrots, 2 onions, 3 heads of celery, 2 blades of mace, 4 cloves, a faggot of savoury herbs, 1 bay-leaf, a teaspoonful of salt, half that of pepper, 1 head of celery, browning, the crust of a French roll, 5 quarts of water.

Mode.—Lay the ham in the bottom of the

stewpan, with the butter; break the bones of the cheek, wash it clean, and put it on the ham. Cut the vegetables small, add them to the other ingredients, and set the whole over a slow fire $\frac{1}{4}$ of an hour. Now put in the water, and simmer gently till it is reduced to 4 quarts, take out the fleshy part of the cheek, and strain the soup into a clean stewpan; thicken with flour, put in a head of sliced celery, and simmer till the celery is tender. If not a good colour, use a little browning. Cut the meat into small square pieces, pour the soup over, and serve with the crust of a French roll in a tureen. A glass of sherry much improves this soup.

Time, 3 to 4 hours. Average cost, 8d. per quart. Seasonable in winter. Sufficient for 10 persons.

Pea Soup (Green.)

INGREDIENTS.—3 pints of green peas, $\frac{1}{2}$ lb. of butter, 2 or three thin slices of ham, 4 onions sliced, 3 shredded lettuces, the crumb of 2 French rolls, 2 handfuls of spinach, 1 lump of sugar, 2 quarts of medium stock.

Mode.—Put the butter, ham, 1 quart of the peas, onions, and lettuces, to a pint of stock, and simmer for an hour; then add the remainder of the stock, with the crumb of the French rolls, and boil for another hour. Now boil the spinach, squeeze it very dry, and rub it, *with the soup*, through a sieve, to give the preparation a good colour. Have ready a pint of *young* peas boiled! add them to the soup, put in the sugar, give one boil, and serve. If necessary, add salt.

Time, $2\frac{1}{2}$ hours. Average cost, 1s. 9d. per quart. Seasonable from June to the end of August. Sufficient for 6 persons.

Note—It will be well to add, if the peas are not quite young, a little more sugar. Where economy is essential, water may be used instead of stock for this soup, boiling in it likewise the peashells, and using rasher a larger quantity of vegetables.

Winter Pea Soup (Yellow).

INGREDIENTS.—1 quart of split peas, 2 lbs. of shin of beef, trimmings of meat or poultry, a slice of bacon, 2 large carrots, 2 turnips, 5 large onions, 1 head of celery, seasoning to taste, 2 quarts of soft water, any bones left from roast meat, 2 quarts of common stock, or liquor in which a joint of meat has been boiled.

Mode.—Put the peas to soak over-night in soft water, and float off such as rise to the top. Boil them in water till tender enough to pulp; then add the ingredients mentioned above, and simmer for 2 hours, stirring the soup occasionally, to prevent it from burning to the bottom of the saucepan. Press the whole through a sieve, skim well, season, and serve with toasted bread cut in dice.

Time, 4 hours. Average cost, 6d. per quart. May be made all the year round, but is more suitable for cold weather. Sufficient for 10 persons.

Miscellaneous.

NEW GRAIN ELEVATOR.—A grain elevator has been erected on the water frontage of Toronto, near the Queen's wharf, by Mr. John Shedden of this city, and which was formally opened to the public on 19th inst. (March 1863.) The erection of the elevator in this city is certainly a great boon to the commercial interests of the western portion of the Province, more particularly of Toronto. It will afford facilities for the transportation of grain which has long been much needed in this city. Such an important enterprise must certainly increase our carrying trade to a very considerable extent. The building is constructed on a wharf at the foot of Peter street, and is very substantially built, its cost, exclusive of flour sheds, being upwards of \$50,000. There is store room in the building for 8,000 barrels of flour, and the sheds will contain from 15,000 to 20,000 barrels. There are 44 bins capable of containing from 4,000 to 7,000 bushels each, making in the aggregate about 220,000 bushels as the storage capacity of the building. Two vessels can be loaded at the same time, one at each side of the building. There are three separate elevators in the structure, and cars can be weighed as they are passed in on two of Fairbank's scales, which are capable of weighing about forty tons each. A weighing hopper placed in the elevator is capable of containing about 500 bushels at one draft, which can be passed into the vessels in an instant by opening a valve. The engine, which is a high pressure one of 40 horse power, was made by Mr. John Gartshore, of Dundas.

OUR BIRDS AND POISONED WHEAT.—In our country there is not the scarcity of small birds with which persecution has afflicted France, and our war against them is less inveterate; but still there is much to be done in every rural neighbourhood. Our rustics shoot owls and bats, and then complain of mice, moths, and night insects—of rats in the stack, and dormice in the woods. They crave credit for the scores of sparrows, wagtails, yellowhammers, and wrens that they destroy, and then are ready to cry over the ravages of worms, weevils, cockroaches, caterpillars, and other plagues. Of late we have heard a good deal of the spreading practice of destroying so-called "vermin" (not the insects, but the birds) by poisoned wheat. I wish such devices could often meet the punishment which I remember seeing candidly narrated in a newspaper some years ago. The writer of the confession wanted to save a row of peas from the sparrows. He was struck with remorse when he saw a bird or two staggering on the top of a wall, as if drunk, and falling off; but scarcely any died, while the staggering birds on the wall pushed the poisoned grain off among an establishment of pet fowls of great value, every one of which died.

Editorial Notices, &c.

BACK NUMBERS.—We are still able to supply the back numbers of the present volume of the *Agriculturist* to subscribers at the very low rate mentioned in advertisement.

THE PUBLIC GRANT TO AGRICULTURAL SOCIETIES.—According to the estimates before Parliament it is probable that the grant to Agricultural Societies this year will be reduced about 25 per cent. Treasurers of County Societies should send in their affidavits promptly to this office, as soon as possible after 1st May, so that the amount to which they are entitled may be obtained without any unnecessary loss of time, as soon as available.

TORONTO MARKET PRICES.

TORONTO, APRIL 23, 1863.

Fall Wheat, per bushel.....	\$0 90 to \$0 94
Spring Wheat, ".....	78 " 84
Barley, ".....	1 00 " 1 05
Peas, ".....	55 " 60
Oats, ".....	42 " 45
Rye, ".....	56 " "
Pork, per 100 lbs.,.....	3 75 " 4 50
Beef, ".....	4 00 " 5 00
Mutton, ".....	4 00 " 4 50
Potatoes, per bushel,.....	65 " 70
Apples, per barrel,.....	1 00 " 1 50
Turnips, per bushel,.....	16 " "
Fresh Butter, per lb.,.....	15 " 20
Tub Butter, ".....	12 1/2 " 15
Eggs, per doz.....	9 " 10
Chickens, ".....	40 " 60
Hay, per ton,.....	10 00 " 20 00
Straw, ".....	5 00 " 11 00
Hides, per 100 lbs.,.....	4 50 " 5 00
Calf-skins, per lb.,.....	8 " 9
Sheep-skins, each.....	1 40 " 1 75
Wool, per lb.,.....	30 " 32
Clover Seed, per bushel.....	3 75 " 4 00
Timothy Seed ".....	2 00 " 2 50
Plaster of Paris, per barrel ..	95 " 1 00

BLOOD STALLION FOR SALE.

FOR SALE, a Blood Stallion, "*High Flyer*" six years old, bright bay, 15 hands 3 1/2 inches high; Sire "Sir Tatton Sykes," dam by "Somonocodrom."

Terms cash, or six months' credit on good security. Apply to

GEO. COOPER,

Davenport P. O., near Toronto.

March 20th, 1863.

THOROUGH-BRED SHORT HORN BULLS FOR SALE.

MORETON DUKE, got by Mr. Stone's Bull 3rd Grand Duke, 2292, calved 9th June, 1860.

William of Oxford, got by Mr. Stone's Bull 12th Duke of Oxford, calved 19th November 1859.

David, got by Sir Charles, a son of 3rd Grand Duke, calved 1st March 1861.

Marquis of Oxford, got by William of Oxford, calved 20th March 1863.

Warwick, got by Moreton Duke, calved 26th March 1863.

Terms very reasonable.

W. WILLCOCKS BALDWIN.

Larchmere, Oak Ridges.

April, 1863.

tf.

THOROUGH BRED STOCK.

THREE yearling Durham Bull two Galloway Bull Calves, two imported Ayrshire Bulls, yearlings, for sale.

GEORGE MILLER,

Markham.

April, 1863.

tf.

THE CANADIAN AGRICULTURIST AND JOURNAL OF THE BOARD OF AGRICULTURE: OF UPPER CANADA.

THIS LONG ESTABLISHED PERIODICAL will for the future, be published MONTHLY, commencing JANUARY, 1863.

Each number will contain not less than 40 pages, illustrated by Wood Cuts.

The Horticultural and Veterinary Departments in particular, will be enlarged and improved, and the price reduced, so as encourage the formation of Clubs throughout the country.

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Professor Buckland, University College, Toronto. Hugh C. Thomson, Secretary Board of Agriculture of Upper Canada. Andrew Smith, Licentiate of the Edinburgh Veterinary College and Consulting Surgeon to the Board of Agriculture of Upper Canada.

All orders to be addressed to the Secretary of the Board of Agriculture, Toronto.

BOARD OF AGRICULTURE OFFICE.

Toronto, December, 1862.

THE
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 AND
 JOURNAL OF THE BOARD OF AGRICULTURE
 OF UPPER CANADA.

VOL. XV.

TORONTO, JUNE, 1863.

No. 6.

THE PROVINCIAL EXHIBITION.

We publish in this month's issue the prize list and regulations of the Eighteenth Exhibition of the Agricultural Association of Upper Canada, to be held in the City of Kingston, September 22nd, 23rd, 24th and 25th, 1863.—The attention of our readers and the public generally is earnestly invited to an inspection of the List, which will be found to embrace almost every article of importance connected with agricultural and manufacturing industry, including horticultural and artistical productions. It has always been the practice of the Association to award a money prize or a diploma to such articles of merit as may be shown, although not mentioned in the catalogue; and the occasion of the Provincial Show consequently presents the most favorable opportunity to producers of every description of bringing their various productions fairly before the public, and to have their merits determined by competent and responsible judges. The sum offered in premiums has been of late years considerably increased, amounting now to the magnificent sum of about TWELVE THOUSAND DOLLARS! We think the Board has acted wisely in thus keeping up the amount of the premium list; as large and numerous prizes will be sure to draw together a great number of visitors and competitors, from whom are chiefly derived the means of paying the premiums and expenses of conducting the Exhibition.

Kingston is most favourably situated for a great gathering of this sort, it being of conve-

nient access both by rail and water, and occupying a sort of central position between the middle and eastern sections of Upper Canada; and is readily reached both from Montreal and the neighbouring States. If, therefore, the weather should prove favourable, another display of our great resources, and of the status of our art and industry, may confidently be anticipated that will reflect honour and credit on this rapidly advancing portion of the great British Empire.

As Kingston was the first of our cities to erect extensive buildings of a permanent character for the accommodation of our Provincial Exhibitions, nothing will now be wanting to render that accommodation still more complete, so as to meet fully the constantly increasing demand for space. With that view the Corporation have granted two thousand dollars, and the Council of the United Counties an additional two thousand, so that our farmers and mechanics, and other exhibitors, may safely reckon on having plenty of space, thoroughly protected, for exhibiting their various productions.

It will be seen from the List that numerous prizes are offered in the department of Arts and Manufactures, and it is much to be desired that our artisans should begin immediately to prepare for the occasion, if they have not done so already. Not a day should now be lost, and every effort should be made to sustain and improve this interesting and useful department of the Exhibition. We trust also that the leading farmers and stock breeders in every part of the Province will be represented on this occasion but it should not be forgotten by the inhabitants

of the central and eastern sections that we must mainly look to them for the bulk of the material. As Kingston is situated, we may fairly expect a considerable amount from Lower Canada, and some from the State of New York, particularly when it is remembered that in Live Stock and Agricultural Productions, the competition is not confined to this Province. In Horticulture it will be perceived that the arrangement of the premiums has been somewhat altered, and it is believed improved; and it is hoped that the amount of prizes in this very interesting department, will bring out extensive competition. In a word, we trust that nothing will be wanting, either among the directors or the public, to make our next Provincial gathering what most of its predecessors have proved, worthy of so great an occasion, stimulating industry, and confirming progress, as the normal condition of Canada.

CULTIVATION OF ROOTS AND INDIAN CORN.

EDITORS OF THE AGRICULTURIST.—Seeing an article in your valuable paper urging Farmers to write for their paper, and being a Farmer, of course it applied to me as well as others. Now I think if you had a page, or even a column, for inquiries and answers, it would be of great benefit to your readers. It would give them a chance both to ask and answer questions. The article you gave on root cultivation is certainly an excellent thing, it gives people a chance to know what kind of land roots grow best on. I consider that article worth the subscription of the *Agriculturist*. Now I have found, as I see in that article, that roots grow best after sod. I generally turn sod down one Spring, sow it with peas, and next Spring cross-plow, cultivate, and harrow it well, (not using any manure,) then drill 24 inches, and sow 20th June, then roll with a two-horse roller; and I generally get First prizes for Turnips, Mangel wurzel, Beets and Carrots, at the Fall Fairs.

Now, if you allow to make an inquiry through your Paper, I will do it. How is the best way to manure corn and what kind of manure is best; if lime, ashes and plaster mixed equal would not be good as a top dressing?

J. R. S.

Brampton.

[The Indian Corn Crop is a voracious feeder. Almost every kind of manure, farm-yard or artificial, may be used with advantage. Dung,

in the farm-yard, stable, or hog pen, may be spread liberally broadcast, and ploughed in.— If the land has been previously ploughed, it may be covered in with a light furrow, and harrowed to mix well with the soil before marking out the rows. An application of lime spread broadcast upon the surface is beneficial. Ashes also are an excellent manure for Indian Corn, and may be used in the proportion of about half a pint dropped upon each hill. Plaster also, in smaller quantities, has a good effect. Our correspondent may safely try the mixture he proposes. It is frequently used in the United States. We shall be glad to hear the result of his experiments.—Eds.]

CULTIVATION OF CORN.

EDITOR AGRICULTURIST.—Sir: Feeling an interest in the Agricultural pursuits of the Province, and thinking perhaps I was one of those you call upon so earnestly to contribute to the *Agriculturist*, I can perhaps give some hints in regard to the cultivation of corn that will be of interest to farmers generally.

There is no crop, in my estimation, pays so well as Indian Corn. As a substitute for summer fallow it follows closely to the turnip, and deserves in most parts of America to take the place of the turnip in England. Ground fitted properly for corn is almost sure to bring good wheat the following spring. The stalks as fodder I have tested for a few years, and find them preferred by cattle to hay, and no coarse feed will produce such a flow of rich milk. I have noticed in my own observations that stalks properly saved would, when fed to milch cows, immediately increase the flow of milk, when hay had previously supplied their place. The grain cannot be surpassed for fattening purposes, either in beef or pork, for quality or firmness of flesh. Pork fattened on peas will be oily, while corn-fed will be firm, and bring a better price in market. The quantity produced far exceeds that of most grains; I have grown on an average sixty-five bushels per acre, or I believe three times the quantity usually grown of peas. Why farmers have such a dread in Canada against raising corn is more than I can tell; the seed per acre is far less expensive than that of any other grain, while it does not have to be planted until all other grains are in.

My plan for fitting the ground is as follows: I select a piece that will do for nothing else if I have it. In the fall I manure with as good manure as I have, plow in deep, say

ten inches, and then harrow it down. The following spring, about the 15th of May, I draw on all coarse horse manure made the previous winter, and commence to plow it in about the twentieth of May. After plowing, drag it thoroughly. I now take a marker, which is made by boring holes four feet apart in a four by four scantling, and placing therein large pegs made of hard wood, then bore holes and place some poles in for shafts, fasten on your whippetrees, put in your horse, and commence to mark your ground, both ways if you like. I generally try to plant straight one way by stakes, put from four to six grains in a hill, cover with fine fresh dirt, spat it down with the hoe, and keep your feet off. Just as soon as you can see it coming up sufficient to follow the rows, start the best cultivator you can find both ways through it. In the course of a week or two cultivate again and follow with the hoe. After you are done hoeing plaster it lightly, say one handful to four hills. By the time the corn is a foot high run a small plow through, throwing the dirt towards the hill, then with the hoe dress it up, removing all weeds and suckers, if the grain is your object; if not, let the suckers grow, and my word for it you will have a crop you will be proud of, and willing to try again.

Duffin's Creek, May 10th, 1863. S.E.C.

ON LAYING DOWN MEADOWS.

EDITORS OF THE AGRICULTURIST.—*Gentlemen*,—We hear of and see a great deal of misery amongst the cattle of Canada, caused by the poor system of our farmers of sowing so much wheat and neglecting what ought to be sowed—hay, and plenty of it. I know by experience, and they would find out if they would only try it for a few seasons, that they would be gainers by it. It is absurd to think that the farmers of Canada cannot keep their cattle alive when they have the means in their power to do so; but they are too blind to see that they are standing in their own way to fortune. They think that they are doing great things when they have got all their fields turned over ready for sowing with wheat; but they are greatly mistaken, for they have done the very worst thing they could do. Where is their *hay* and oats to keep their teams in working order? They have neither. When spring comes they must go and hunt up enough of hay and oats to put their team through the work, and it mostly turns out that their neighbors are in the same fix as themselves, and they cannot get what they want; so they have to do as they can, and that is not very well you may suppose, but still it has to be done, and no help for it, unless they change their ways.

Now is it not infinitely better to have enough to keep their cattle, and have the pleasure of seeing them in good order than to have them like two boards stuck together? But it will always be the same way unless they make some alteration in their domestic economy. They may ask what alteration they can make? Well, I will tell them what they can do; but it will take some time to realize anything, on account of the state of their land. They must first take one or two of their fields, and get them into good heart by manuring them well, and then get them well ploughed—they know how to do that by this time, for they have done it often enough—then sow it with wheat or oats; the first is the best, but the latter would not take so much strength from the ground, but if they are sown too thick they are bad for smothering the grass, so wheat is preferable, as it is not so close at the bottom, and it will give the grass a chance to grow. Then, when they have got them in working order, they can proceed as before. The fields that were sowed first can lie in grass for three years, not more, for then they begin to get worse, and they will not pay to keep them any longer, but turn them up and sow peas on them, and then they will come in to sow fall wheat on, if convenient, if not they will come in very well in the spring, and then you will have a crop that will pay itself, which you could never have by sowing grain every year on the same field. Rotation is the thing, and that you will find out to your gain, if you will keep at it, and you will have no trouble to decide what you will put on this field and what on that—it is as plain as a black spot on a sheet of white paper.

Messrs. Editors,—hoping that the farmers will consider this well before they condemn it,

I remain,

Yours, &c.,

JOHN DOBIE.

Mosa, C. W., April 30, 1863.

HEMP.

We are of opinion that the cultivation of Hemp is deserving of much more attention than it has heretofore received in this Province. In view of the importance of directing the attention of our farmers to the production of some textile fibre as an additional item in their operations, considerable prominence has been given in the pages of the *Agriculturist*, for some time past, as well as in many other public journals, to the culture of *Flax*. But the cultivation of Hemp equally deserves the

consideration of the farmer, and probably would prove quite as profitable a crop as Flax. On these considerations we have pleasure in giving insertion to the following very concise and practical Essay, written, as we infer, at the instance of the Iowa State Agricultural Society, but which will be found equally valuable, for the information it gives, in Upper Canada.

Essay on Hemp Culture.

BY J. L. BRADFORD, PRESIDENT OF THE KENTUCKY STATE AGRICULTURAL SOCIETY.

SIR,—The culture of Hemp is an interest of great and growing importance in the great West. Its production heretofore has been mainly confined to Kentucky and Missouri, but there can be no reasonable doubt in the minds of those who have given the subject the least attention, that Illinois, Iowa, Minnesota and Wisconsin, have vast advantages over the two named States in its production. Many writers have advanced the idea that Hemp, like Cotton, could not be grown by free white labour; and that its production would, for some time at least, be confined to the slave States. Nothing can be farther from the truth. The climate the very best adapted to Hemp growth, is found far north of the home of the negro, and where he would absolutely perish from the effects of climate. Hot, short, quick, forcing seasons of growth, just such as the region referred to actually possesses, are, of all, best adapted to the plant-growth of this great staple, and the day is not distant when the named States will be as noted Hemp producing States as Kentucky and Missouri ever were.

It is to be regretted that in our Census returns, Hemp and Flax have been confounded, but it may, however, be safely assumed that the growth and preparation of Hemp is so far below the actual consumption of the country as to assure the Iowa agriculturist of a continued good demand and paying prices for many years to come; and the experience of Kentucky and Missouri has fully proven that the production of even an inferior staple has been and is yet remunerative. The reader must bear in mind the fact that American Hemp is almost exclusively what is technically called *dew rotted*, that is, spread upon the surface of the earth and there rotted by the slow process of the elements. France grows more Hemp than Flax for the linen manufacture, and the finer grades of cordage and twines. The fibre is greatly superior to American, from the fact that her climate is of a lower temperature than that of the portion of this country that grows Hemp, and the further fact that she has abundant supplies of pure soft water for steeping in the rotting process; and the same is true of the

Russian production. The soil of Kentucky is as well adapted to the growth of this plant as any in Europe or America, but there her adaptedness ends; her general temperature is too high and she is entirely destitute of water of the proper quality for the steeping process; hence all attempts to furnish our Navy from this State have been failures, notwithstanding that the department has offered great inducements to her growers to water-rot. Iowa has certainly a climate much colder than Kentucky, and pure soft water in her small lakes and streams without limit, and most certainly a soil equal in fertility to any on the globe.—Why may not then her enterprising people reach forth their hands and lay hold of this prize, so well adapted to her soil, climate and situation. In the process of dew rotting, the fibre, especially in warm climates, is materially deteriorated, and in some cases so far injured as to produce a very low grade of lint, unfit for anything but the very coarsest and lowest grades of bagging. This is especially the case when exposed to the dew process in open wet winters in Kentucky, thus proving that the true Hemp latitude is north of this State. Cold, snowy winters, on the contrary, universally produce an improved quantity of lint, always brighter and stronger.

CULTURE OF SEED.

The first step in Hemp culture is the production of good sound plump seed. Land intended for seed must be in good tilth and well prepared for planting by corn planting. It should be laid off in straight rows four feet apart each way and planted in hills, seven or eight seeds to the hill. The same rules observed for cultivating corn will apply in the after culture of Hemp seed. When the plants reach six or eight inches high, they should be thinned to from three to four plants. Hemp plants are divided into what the farmers call male and female, the former producing the pollen or impregnating powder, the latter bearing the seed. A very little observation will enable the growers to distinguish between them. As soon as they can be distinguished, the male should be drawn up by the root, except here and there a solitary plant left, that the female plants may be properly impregnated. The female is to be retained until its seeds are perfected, when it is to be harvested by cutting at the ground and removal to cover. When cured detach the seed with a stout stick of convenient length, winnow and put up in barrels or sacks, perfectly dry, out of the way of rats and mice.

PREPARATION OF LAND.

The soil for Hemp must be a strong calcareous, deep, warm, loamy, perfectly dry one, deeply and thoroughly prepared by plowing until a fine state of tilth is produced, more or less according to its previous condition.

PUTTING IN THE CROP.

The ground having been faithfully prepared, the grower must hasten the operation of seeding with the utmost dispatch, as the earlier the seeding, as a rule, the heavier the lint of the plant. Mark off the land with a small plough and very shallow furrow, or it may be marked off by a drag made of a small log of wood; anything to make a line to guide the sower accurately; then proceed by hand to broadcast your seed evenly at the rate of fifty pounds of seed per acre as the *minimum* or even up to seventy pounds as the maximum quantity, varying with the strength of the land; the object being to produce as thick a growth of plants as the land will sustain. If the plants set too thin on rich soil the stalks grow too coarse, producing a coarse and inferior lint; on the contrary, if seeded too thick the growth proves so short as to materially affect the value of the crop. In the latitude of the hemp growing section of Kentucky the seeding is mostly done from the 1st to the 15th of April, and the land generally plowed the fall before.

In Iowa the seeding should be done as soon as the ground proves to be in good dry working order; although the seed itself seems very tender and its vitality easily affected, and its germination after sowing often seriously disturbed by unfavourable circumstances, yet, when once above ground and fairly set, no ordinary frosts that destroy other vegetation, seem to affect it; hence, but little danger need be apprehended from late frosts, that prove so destructive to corn. The seed being sown, proceed to cover them up with a light harrow by running both ways to secure uniform results. The shallower the seed is covered in a moist soil, the more certain the vegetation.—If the season and soil be dry, a somewhat deeper covering may be necessary. Under favourable circumstances, the crop makes its appearance in a few days, and with proper sun and moisture it rapidly covers the ground. From seed time until harvest, the laborer has only to watch its almost magic growth from day to day. After having once covered the ground the crop is generally considered safe by the grower, yet he is sometimes doomed to disappointment. Hail storms prove very destructive to the very tender watery growth of the young hemp plant; high winds damage the yield, but never entirely destroy the crop from seed time until harvest.

RIPENING AND HARVESTING.

The maturity of the crop is indicated by a change of color in the leaf, it gradually fading from a deep green to a paler hue, also a shedding of the leaves, beginning at the bottom of the leaves and gradually extending up the stalk.

The male plants ripen fully ten days in ad-

vance of the female, and in some countries where labour is next to nothing, the male is first harvested by being drawn up by the roots, the female being left standing; in our country such a mode of harvesting is impracticable; hence the American grower must divide the time as near as may be, between the earlier and later ripening, and thus secure the best results possible under the circumstances. The male plant is covered with minute pods, bearing pollen, which at maturity burst and fill the whole atmosphere. It may be seen when the crop is stirred by a brisk breeze rising in immense clouds and floating away from the field. When this is seen in addition to the indications previously named, the crop is ready for the knife.

This instrument is of a peculiar shape, perfected by long experience and need not here be described, as they can be purchased in the hemp region of Kentucky of almost any smith. The ancient manner of harvesting was by pulling as with flax, but this has long since been abandoned in favour of the hemp-hook, as the knife is called. Of late years, J. B. McCormick of St. Louis, Mo., and Versailles, Ky., has patented hemp-cutting machinery as an attachment to the McCormick Reaper. The writer has used the attachment and considers it a perfect success; it will supersede the hook in all level lands, and must prove well adapted to Iowa use. In Kentucky some of her best hemp lands lie so rolling and so rough as to perhaps preclude its use. If the crop is to be cut with the hook, the operator is required to cut at one through a width corresponding to the length of the hemp and as close to the ground as possible, spreading his hemp in his rear in an even, smooth swath, where it remains exposed to the sun's rays until it is properly cured and the leaves sufficiently dried to detach easily. The last operation is sometimes omitted by careless growers, and some contend without injury. The hemp can be shocked or *stooked* (as the Yankee would say) with more compactness without the leaves than with them, and any operation having an influence upon the future security of the staple from dampness or atmospheric influence is certainly important; the perfect detachment of all the leaves should then in no wise be admitted. No time should be lost after the stalk is cured in getting the crop up and in neat shocks. Every additional day's exposure to sun, wind, rain or dew, is deteriorating its quality and subtracting from its quantity; the brighter the stalks can be secured the better. The same rules will apply to hemp that obtain in securing good hay.—The operator, in taking up the hemp, uses a rude stick cut from the branches of the nearest tree, about the length and weight of a heavy hickory walking cane, taking care to use a fork of the branch (←) as

delineated. With this primitive but very effective tool he can rapidly draw the stalks into bunches of the proper size for sheaves.—In operating he throws his rude hook forward its full length, and suddenly draws it toward him, each motion making a bunch; this he raises quickly from the ground, and, with his hook by a few well directed strokes, divests the plant of its leaves; he then binds his sheaf with its own stalks and passes on to repeat the operation. Other laborers follow and place the hemp in neat close shocks of convenient size, securing the top by a neat band made of hemp stalks themselves after the manner of shocking corn. Here it is suffered to remain until the whole crop is thus secured; as soon thereafter as possible, selecting clear dry weather for the operation, the whole crop is to be secured by ricking or stacking.

The same rules are to be observed in stacking as with grain—the object being to keep the crop secure and dry until the proper time for rotting arrives; in the latitude of Kentucky about the middle of October is the proper time. The crop must be in the rick or stack, until the summer heats and rains have passed and frost appears instead of dew, the whole crop is then removed from the rick, and re-hauled back on the same ground on which it grew, there to be spread in thin swaths for rotting, where it remains without turning until properly rotted. This is indicated by the fibre freely parting from the stalk, and the dissolution by the action of the elements of the peculiar substance that causes it to adhere thereto. This stage is only to be learned to perfection by practical experience, yet the novice must have some information to enable him to begin to learn, and it is easily acquired by any one the least observant. When the operator finds his hemp sufficiently rotted, the wooden hook is again brought into requisition for drawing once more the swaths in convenient bunches. The hemp will have lost much of its weight, and can be bunched and shocked with less labor than at first, besides, at this last shocking, the binding is to be omitted entirely; the hemp is to be carefully and neatly handled, all tangling to be avoided, and placed again in neat shocks and firmly bound at the top. Then comes the last and crowning operation—the breaking and dressing the fibre or lint for the market. The peculiar brake to be used, like the knife or hook for cutting, needs no description; they are manufactured in the old hemp regions at a cost of about \$5 each, and from long experience have been perfectly adapted to the uses required. The new beginner would save time and money by ordering a sample brake, from which any carpenter can manufacture as desired. The crop is broken in this climate directly from the shock in the open field by the removal of the brake from shock to shock

as fast as broken. In Iowa, owing to the severity of the climate, it would probably be necessary to remove the rotted hemp to the barn, where the labour of breaking could be more certainly performed. The coldest and clearest weather is the best for this operation—in fact, excess of dampness in the atmosphere suspends this latter altogether. The breaking process is laborious, yet more depends on the skill than the strength of the laborer.

I have endeavoured to describe the whole progress as practised by the best growers in Kentucky. The same mode will certainly apply to Iowa up to the rotting process. With her advantages, steeping in soft water is entirely practicable, by which she will produce an article of water rotted hemp perhaps in no respect inferior to the highest-priced Russian, which is fully double the value of the American dew-rotted, the only sort produced in this State. The writer is apprehensive that seasons are too short in Minnesota, Wisconsin and Iowa, for the successful growth of seed, a defect easily remedied by the purchase of seeds grown in more Southern latitudes, but not a shadow of doubt exists in his mind that they can, at the very first effort, produce better hemp than any territory South. Time, he thinks, will demonstrate that Illinois, Iowa, Minnesota and Wisconsin compose the TRUE HEMP REGION of the American continent.

FLAX CULTURE.

[An esteemed correspondent sends us the accompanying article addressed to the *St. Mary's Argus*, by Mr. Black, an intelligent and enterprising farmer, formerly of Northumberland in this Province, but now a resident in the county of Perth. The article is somewhat long for our columns, but the importance of the subject, and its able handling by a practical man, justify its reproduction in an unabridged form. Eds.]

DEAR SIR:—I have for some time been urging upon the Agricultural Societies with which I am connected, to consider the importance of endeavouring to induce the Farmers in this locality to try the cultivation of Flax. From what I have observed of its culture in Ireland, and having cultivated Flax for twenty years in this Province, I am convinced that Flax growing can be profitably introduced as an article of exportation into the rotation of cropping in this country.

The Blanchard Branch Agricultural Society, at their late annual meeting, invited me to read an essay on the cultivation and management of Flax at our annual fair in April, which I reluctantly agreed to do, in connection with the cultivation of wheat; but since then, Mr. Forrester and myself having concluded to erect a

scutching machinery in St. Mary's, that period is deemed too late in the season for parties to benefit by any information which I might be able to give them. Therefore, with your permission, I will endeavor—although very uncapable—to give the public all the information I can on the subject through your valuable journal.

Although it will extend this to a rather long article, yet I consider it necessary that I should state, in connection with Flax growing, my views on the injurious effects of having so much land under wheat in this country, lest it be imagined that I am advocating the culture of Flax at the expense of a diminished quantity of wheat. My object is to show my brother farmers that the growing of Flax in the rotation, will increase the quantity of wheat, and at the same time enable us to diminish the breadth of land sown to wheat.

For 17 years I have experienced the ravages of the numerous insects, and I have invariably observed that they did most damage to crops where land was poor and foul from a succession of wheat crops; and also that where land was rich and clean, neither drouth nor insects effected the crops nearly so much. There can be no doubt but that a series of cereal croppings is most ruinous to the soil, especially in this country where a sufficient quantity of manure is not applied, without which, and sufficient rest from white crops, the land will get hard and sterile. Crops on such lands may look tolerable healthy during a favourable spell of growing weather, but a drouth of 8 or 10 days will cause this luxuriance to vanish into a poor stunted yellow appearance, with blades like horse's hair. How can it be otherwise, with a soil perhaps to the depth of 5 or 6 inches; like as much broken stone, which cannot defend itself against drouth, neither can it retain moisture, and a subsoil so hard that the roots of plants cannot penetrate in search of nourishment. With such poverty and hard usage, it is no wonder that the crops are weak and unable to stand a dry time and the onsets of vermin. To enable us to produce better crops, we will require to have a less extent under wheat and that in a better condition by thorough cultivation, liberal manuring, and rest from white crops.

There is no doubt but that the want of sufficient capital among us is one cause for so much land having been put under wheat. Wheat has been the main article that the farmer could depend upon to enable him to meet his engagements.—Therefore many have been obliged to sow wheat year after year in succession, although they knew at the time that if they could spare that field from wheat, and clean, manure, and seed it to grass for 2 or 3 years, that when put into wheat again it would pay them double; but they required immediate returns, even if they should be small.

I consider that the cleared lands in Canada ought to support double the quantity of stock, and they better fed than what is on it at present,

to give the land the least chance to continue to produce a quantity of wheat equal to what it is producing at the present time. For years past the greater portion of the lands have been put under wheat and other cereal crops, leaving only a small extent for cleaning crops—hay and pasture—and nothing for cattle in winter but sapless straw, and that commodity they often get their own way of managing, frequently tramping their winter supply under their feet in a few months, and in April they have to roam the fields, if able, in search of food, poaching the land, and nipping the first buds of grass into the ground. The pasture is kept so bare that when a drouth comes, it is burned up and unable to sustain the stock during the whole summer after, and then when plowed under there is no rich sward to decompose and enrich the soil for future crops. It has been impoverished as well as the stock. Animals of all kinds require shelter from the winter blast and summer heat; so also does grass lands.

The solid and liquid manure obtained by having a full stock of well fed animals is a treasure to the farmer. So also is a close, rich grass sward turned under to rot, which makes first-class manure for all kinds of crops.

We require to have more acres under hay, pasture, and cleaning crops, such as roots, flax, corn, &c., if we expect to grow wheat with profit.

I believe that nearly one half the land which is now put under wheat, if put under regular rotation and sufficiently manured, would yield more wheat than the whole acreage now produces, and of a superier quality, and not so liable to injury by its many enemies.

The culture of Flax is becoming the subject of increasing interest to the people of this country, but more so at present on account of the war in the States; but there is little doubt, if machinery had been introduced years ago for preparing the fibre, that large quantities would have been grown over a large extent of Upper Canada.

And when we reflect that the prosperity of the Province is mainly dependant upon the success of the wheat crop, we may wonder that our Bureau of Agriculture has not given their attention more toward encouraging this source of industry, which might not only have saved to the Province large sums of money, but have given us a surplus to export. I see that in 1844, £80,000 worth of cordage, bagging and canvass, was imported into this country, and of course this is but a trifle in comparison to what is now imported.

Before the war with Russia, Great Britain was yearly importing from that country alone, \$26,000,000 worth of flax, and in 1831, Britain imported 2,759,100 bushels of flax seed for crushing and sowing.

Why might not Canada have a few millions of this money; with a soil and climate so peculiarly adapted to the growth of flax and hemp as ours

is, we ought to export more value of this article than all our surplus of wheat now brings us. The oil also can be made a profitable item to us, as soon as there is enough grown to afford a surplus after the seed required for sowing. Flax seed yields about 5 gallons of oil per 3 bushels, or 22 per cent.—the remainder being oil cake.

Let it also be remembred, that a first rate man-of-war requires the produce of 320 acres of an average crop of hemp, for an outfit of cordage alone.

From these figures, and our own increasing wants, there is every prospect of finding a ready market for all that we can produce, and at full prices. With a view of introducing machinery for scutching flax, into this locality, Mr. A. Forrester and myself went down to Waterloo, where we visited three mills, two of which were in operation, belong to Messrs. Perine & Co. These gentlemen own four mills in that section, and also have machinery for manufacturing. They have been in the business ten years, therefore their experience, so freely imparted, is more applicable to us to be guided by at present, than to follow systems pursued in countries where the price and supply of labour, and climate are so widely different from ours. They scutch at their mills from 1,500, to 2,000 acres yearly, part of which they grew themselves, by leasing land from the farmers for the season.

The soil best adapted for the cultivation of flax, is a deep, rich, clay loam, with a considerable portion of decomposed vegetable matter in it; but it will grow on any soil provided it is rich and mellow. Except on sandy or gravelly soils, land should not be manured for the flax crop, but the preceding crops should be heavily manured; the yield will be increased and the fibre improved, with the increased quantity of manure applied to the previous crop. Flax may be sown after any crop, if the land is rich and clean; such as potatoes, turnips, corn, and after peas or oats, if they have been grown on fresh sod land, if well plowed in the fall, and thoroughly cultivated with the harrow. But whatever crops precede it, the land, to ensure success, must be made fine by thorough cultivation. Then a heavy rolling, and the land will be ready for the seed, which may be sown from the 20th of April to the 12th of May, at the rate of from 5 to 6 pecks to the acre; if later than this the fibre will not be so good, and will waste in scutching. Cover with a light grass seed harrow, or a brush clear of leaves will answer, but a uniform depth is necessary, and it thereby causes uniform growth and fibre of equal quality. Then a light roller run over it, and it will be finished. Some advocate 2 and 2½ bushels per acre, but Messrs. Perine's experience does not justify so thick sowing. They state that at the present time we must endeavor to get a heavy medium quality of fibre and a good yield of seed, until the people become better acquainted with the management; also,

they say, that when sown so thick the fibre is apt to be short, and I know this to be the case. And again, we must bear in mind that the Irish acre is a quarter larger than the imperial acre, and if we were to sow as much grain per acre as they do in Britain, our crops would be like windle straws.

If two bushels of salt are sown two days before the flax seed, to allow it to mix with the soil, it will kill a great quantity of the seeds of weeds, such as wild mustard, &c., and will keep the land moist, and save labour in weeding. Plaster and ashes sown over, after it is up, will enhance the value of the crop; use all means to push forward the crop to early maturity, as early maturity will not only produce the more valuable crop, but will enable the farmer to pull it before wheat harvest comes on, which is a great consideration. Flax is ready for pulling when the lower leaves appear to be decaying or getting yellow, and the seeds have changed from the white, milky substance to a greenish color, and firm. This is a very important point to be attended to, for if allowed to get too ripe the fibre will be injured, and if too green the seed will be injured.

And in pulling great care must be taken in keeping it even, as raveling or breaking the fibre before rotting causes it to rot unevenly, thereby causing a great waste in the scutching. The binding should not be done with straps of flax, because as the sheaves should be small, say from 6 to 7 inches in diameter, it would waste a large quantity of the fibre. A patch of early sown oats, cut rather green, when thrashed, will answer to bind it with. When bound shock up with 10 or 12 sheaves to the shock, and if there are signs of rain cap the same as in grain; then in a few days (if dry enough for the seed to be separated) the seed may be taken off by rippling, which is a kind of comb constructed of iron teeth, made fast into a plank, and close enough to prevent the balls from passing through. Then the flax is firmly grasped in handfuls and pulled through this comb. The balls or seed then may be thrashed with the flail or the thrashing machine. Thrashing the fibre with the flail bruises it.

Then, if time will permit, it should be spread out thin and regular on grass land, which is bare, to rot, the rotting of which will be accomplished in from six to ten days, according to the humidity of the atmosphere; and when it has been from five to seven days on the grass, great attention must be paid to it by trying it several times a day; if by breaking the shove separates freely from the fibre it is rotted; or if the fibre will strip from the shove, the length of the straw it should be lifted at once. During this process it will require several turnings, which can be done with a small pole or rake handle, then (if dry) it may be bound up in larger bundles than before, and either taken to the scutching mill or the barn.

But if there is not sufficient time to accom-

plish the rotting before the harvest commences, I should prefer putting it into hand stacks in the field, with a little thatch on the top to keep it dry, and shade it from the sun, there to stand until the hurry of harvest is a little over. And as it does not clap like grain, the seed will dry and mature considerably in these small stacks. This will be an advantage to the fibre by admitting the pulling to be done rather on the green side. It would be unsafe to be caught with flax on the ground when harvest commences, as it would likely be lost by neglect.

The grass-rotting system is pursued in Waterloo and considered the most profitable, under our present supply of labour. But I shall give you a few directions with regard to water-rotting, &c. &c. Ponds must be made along the sides of streams where the water can be conducted from them into the pond, and if it can be done a water course made to drain the pond, so as the flax may be washed by running a stream over it before it is taken out. Ponds should be five or six feet deep, and large according to the crop. The water should be soft, and pure from mineral substances, such as iron ore, &c., which abounds in this section. The water should not stagnate in the pond before the flax is put into it. The flax is put into the pond in layers, each somewhat sloped, with the root ends down, much in the manner that the wheat is mowed away in barns, being kept straight; then, when partly filled, a portion of water let on and the filling continued until full; then fill up with water, and cover with plank, or straight rails will answer; then stones, or weight of some kind to sink the flax, but not to the bottom. It will rot in from six to ten days, according to the warmth of the weather; and the same instructions will apply to the rotting which were given before. When taken out of the water, it has to be teamed to a grass field, and there carefully spread out, not allowing clotted bunches to stick together; it will be turned more or less, and when thoroughly dry, bound up, and either taken to mill or stacked. Kiln drying is unnecessary in this country. In a letter to the *Ohio Observer* the writer says, "That we have frequently grown as high as 25 bushels of flax, and 500lbs. of fibre per acre, over an area of 15 to 40 acres, and the land after flax is better for wheat than a summer fallow, as the wheat is not so apt to rust, and the heaviest crops of clover have been grown when seeded with flax." A letter in the *Observer*, from an agent of the American Linen Company, states that from 2 to 2½ tons of straw can be grown per acre, and every ton yields 300lbs. of fibre, so that those who take pains to grow large crops will have, after scutching, 600 to 650lbs. of fibre. For this he says, in a letter to the Governor of Indiana, "We would gladly contract for two years to come, at the rate of 12½ to 15 cents per pound, \$250 to \$300 per ton, according to quality. It costs us this to import it, and we would much prefer paying it to our own industry."

Sir J. McNeil, who cultivated 600 acres of flax in Ireland, states that it is a mistake to suppose that flax is injurious to land. It may be sown every four or five years without injury. A letter to the *Observer*, from Ohio, states "that on rich lands from 15 to 20 bushels seed and from 300 to 700 lbs. of fibre may confidently be anticipated per acre." A neighbour of mine has grown 26 bushels of seed per acre, and the straw was over 3½ feet long. If this fibre had been scutched it would have weighed 600 or 700lbs. of flax. The *Agriculturist* of 1844 states that at a person near Toronto ploughed over a clover sod, one rood, and sowed it with flax; the produce was 8½ bushels of seed, or 34 per acre, and the straw was over three feet long. An excellent article in your paper last week, by Mr. Donaldson, puts the average at 16 bushels of seed, and 500 lbs. fibre per acre. The Messrs. Perine put the average scutched at their mills at 16 bushels, and 300 lbs of fibre, but have got as high as 700bs.; but say that a large yield cannot be got without great care, and good management. Any other crop will abide more negligence. There will also be an advantage in the transportation of flax over wheat and other articles from this to the seaboard, as I suppose ten tons of flax would cost no more than ten tons of wheat (I think a car would contain that of fibre) the one worth \$2400, while the other is worth about \$297. From the foregoing figures, farmers can judge for themselves whether a portion of their land in flax will pay them better than so much wheat sowing. It will be readily seen that those who will prepare their land well, and take pains in the after management, will have more profit on one acre of flax than from 3 to 4 acres of wheat, at the average yield in former years, which was only 15 bushels per acre, and is far less this year, even if we allow from 8 to 10 dollars per acre, for handling the flax crop, which is a large allowance, as four hands can pull over an acre per day, and I have some hopes that before long machinery will be applied for that purpose, which will greatly enhance the profits.

A few acres of flax will bring a considerable amount of money, which will enable the farmer to allow a large portion of his farm to rest from wheat growing, thereby enriching his land, which will ultimately enrich him.

This is what I have in view in treating the culture of wheat in connection with flax growing. Mr. Editor, if this very long article, setting forth these imperfect ideas of mine, should be the means of causing abler pens to give us more information which may induce farmers to try it, my object will be accomplished. I did intend to mention hemp, and explain what can be done with these extra quantities of stock which I spoke of in this paper, but I cannot trespass further at this time, but may at a future.

I am, dear sir, yours truly,

GEORGE BLACK.

We hereby guarantee to have scutching machinery erected in St. Mary's, ready for operation this fall; and also, a machine for separating the seed from the straw, which we will hire out to the farmers for that purpose. Likewise, we will lend seed to parties in this vicinity, who may want it, until the fall. The only charge will be the discount on the money advanced, and all parties who require seed in this way will please enter their names and the quantity with Mr. Long as soon as possible, to enable us to ascertain what amount to order.

GEORGE BLACK
ANDREW FORRESTER.

St. Mary's, April 1, 1863

THE ENGLISH SEED TRADE.

[The following article from a recent number of the *Mark Lane Express*, will give our readers some idea of the magnitude of the business which England carries on in imported seeds. The home growth probably exceeds the amount received from foreign countries, while England exports very extensively agricultural and horticultural seeds to every portion of the civilized world.—Ed.]

The Seed trade of the United Kingdom, agricultural and horticultural must be immense, judging by the extent of land under cultivation and the amount of seeds imported. Leaving out of the question the grain and the seeds raised, saved, and sold at home, of which we have no return or data whatever, we find by the official trade reports that the value of the seeds annually imported, now amounts to about five millions sterling, a sum that must give a considerable profit to many a cultivator and dealer. Thousands of acres must be under tillage yearly to furnish the harvest of seeds thus drawn from different quarters of the world, from India, from North America, Africa, and the Continent of Europe, for the use of our farmers and gardeners. The kinds of seed enumerated in the Board of Trade list of imports comprise about twenty-five, and the principal of these are the oil seeds, which are year by year becoming a more important article of commerce for oil crushing. Taking them in the groups in which they naturally arrange themselves, rather than in the alphabetical order in which they are placed, they are as follows: Pungent and aromatic seeds, carraway, coriander, cumin, and aniseed to the extent of 13 000 cwt., and of the value of £22,000. Dari, millet, and canary seeds, in all, 95,000 cwt., worth about £26,000. Trefoil, lucern, clover, grass, and other pasture seeds, 262,452 cwt., valued at £601,712. Unenumerated garden and field seeds, 26,847 cwt., valued at £31 817, besides carrot and onion seeds worth £12,000 more. Tares, lentils, and kidney beans, 61,159 quarters, value £130,643. This is exclu-

sive of one million quarters of beans and peas imported and classed under "corn" from having to pay the 1s. per qr. duty, while all the other seeds come in free.

Lastly, we have the oil seeds, the most important as regards quantity and value, and which we may specifically enumerate from the official returns of 1861, as we have done the other seeds.

We may here advert incidentally to the want of uniformity in the unit of entries, of which we have often complained, for we have all the confusion of lbs., cwt., tons, bushels, and quarters, instead of that simplicity and uniformity so essential for calculations and in drawing conclusions and summaries. The oil seeds imported in 1861, were:

			Value.
Mustard..	cwts.	23,299	£25,386
Rape ..	qrs.	249,365	711,144
Poppy ..	"	5,451	15,717
Flax ..	"	24,160	65,230
Lint ..	"	1,136,110	3,042,825
Hemp ..	"	10,571	25,084
Sesame ..	"	2,122	6,862
Croton ..	"	93	1,394
Cotton ..	tons.	20,034	152,194
Unenumerated	qrs.	32,305	92,321
Qrs.		1,460,447	£4,138,157

The seeds already enumerated, as coming within the same range, we may perhaps add flower roots, of which about £20 000 worth were imported, and plants, shrubs and trees to the value of £24,000.

But a very small portion of the imported seeds are intended for sowing. The pasture grasses, some of the flax seed, a little of the mustard and canary seed may possibly be so employed. The garden seeds are all for cultivation, and much of the cotton seed imported is intended for distribution abroad, in different new quarters where cultivation has recently been entered on.

About 17,000 cwt. of clover and 23,000 quarters of flax and rape seed went direct to Scottish ports, 26,000 quarters of flax seed and 2,000 cwt. of clover to the Irish ports. Hull and Grimsby are the great ports of entry for the continental seeds, more than half a million quarters being received there—nearly equal to the amount which comes into London—while Liverpool stands third, the imports there being about 250 000 quarters annually. Newcastle, Bristol, Gloucester, and a few others receive smaller amounts.

Now, whence do we derive our supplies of these seeds? The aromatic seeds come from Europe and Africa: the grass seeds from Germany and France, except a little Timothy from North America; the garden seeds chiefly from Holland, Belgium, France, and Hamburg, and the oil seeds mostly from Russia and India, although Egypt, Italy, and Prussia now send us increasing quantities. The pulse, lentils, &c., are principally from Egypt and Portugal. The Aromatic seeds and others are used for cooking,

for confectionery, and medicinal purposes. The great bulk of the oil seeds furnish besides painters', burning, and other oils—oilcake for cattle food and manure, of which our imports are not so large as they formerly were, probably because it is found that we can make a better article at home. The wretchedly foul condition however, in which much of the seed is received renders it extremely difficult to make a palatable cake for cattle, much of it being refused by beasts, owing to the quantity of earth and sand with which it is mixed.

Professor Voelcker, in his paper on the adulteration of linseed cake, read before the Royal Agricultural Society on Wednesday, drew attention very prominently to this subject. He showed that the admixture of foreign seeds with linseed sometimes amounts to 70 per cent. of the bulk; and some of these seeds are not only injurious to the quality of the cake, but actually poisonous. He had taken the trouble of separating from some samples the foreign seeds, and in one he counted no less than twenty-nine different kinds of weed seeds, including the common darnel and the corncockle, which often produce very injurious effects upon the animal system. In others the pungent wild-radish seed occurred, and wild rape and charlock, or common wild mustard. These are positively known to be injurious to cattle, but there are many others in the ordinary linseed cake sold in the market which impair the quality of the meat, though not so injurious to the health of the animals, such as the seed of the gold of pleasure, which imparts a disagreeable taste to the meat, and deep yellow color to the fat, the purging flax, and others. Indian rape-seed cake invariably contains a large amount of wild mustard-seed, which, from its own nature, is highly injurious to cattle. The *Curcas purgans* and other acrimonious seeds are materially detrimental to the health of cattle.

The prices of seeds imported range extremely wide, according to the demand and supplies. Complaints are frequently made, and not without reason, of the quality of the field and garden seeds imported—and this is a matter of great importance in an individual and national point of view.

Considering that we have 19,000,000 acres in the kingdom under arable and garden culture, and 27,000,000 acres in meadows and pastures, the seed required annually is considerable. That it should be good and to be depended upon when imported from foreign sources is highly necessary, and there should be some kind of guarantee that it is not old and valueless, or mixed. Much of this rests with the dealers and seedsmen, who, by obtaining supplies only from respectable foreign houses, would attain for themselves a reputation which could not be shaken. At least three-quarters of a million is spent in foreign seeds required for sowing, and a failure in the vitality of any of these is a serious injury as well as a dishonourable fraud on the purchaser.

RICH LEAN JUICY MEAT—ITS PRODUCTION AND ADVANTAGES.

As practical farmers it must be confessed we have yet to learn how to carry out advantageously, in the dilly pursuit of our profession, under the artificial systems of husbandry now practised, the natural system of fattening cattle, so as to be able at pleasure to increase the proportional quantity and quality of the lean part of our beef, mutton, and pork—the portion that fetches the most money in the market. We can increase the proportion of fat to almost a fabulous amount; but that which procured for the "roast meat of Old England," with its rich "black gravy," a world-wide fame, in the days of our forefathers, we cannot produce. For such we must go to the winds of Lochaber, Connemara, or Wales! There Nature can grow juicy lean meat, with its fine black gravy. True enough, we read many very nice plausible theories in the columns of agricultural journals relative to flesh forming substances; but when we enter the feeding stall at the homestead, and begin to examine tangibly our cattle preparing for the shambles, the beautiful theories thus taught us with so much analytical erudition are, unfortunately, nowhere to be found. For want of certain articulating membranes, or some contrivance to bind them together, the bubbles on the surface of the fair-flowing stream immediately burst, their elementary contents vanishing instantaneously into thin air. Disappointment is the common lot of fallen humanity; and, if we mistake not, the oracles of more than one Obese Experimental school are about to join those of the Delphic of old, the public palate having lost its relish for oily fat. But be this as it may, practical farmers have one consolation in plenty of customers for rich, juicy, lean meat, with the corresponding encouragement to grow it. Such being the position of the practical man, let us briefly examine from an economical point of view his professional duties in the manufacture of rich juicy chops and steaks for the million.

In the first place we have to turn our reader's attention to the fact that it requires a much less consumption of food (provided such food is of a proper quality) to make flesh on the lean portion of the meat, than it does to make the rough fat of the obese system that goes to the tallow chandler. This arises from the large percentage of water which the former contains, especially when compared with the peculiar composition of the latter. Thus, according to the analyses of Brande and others, the lean of rich mutton may contain about 70 to 73 per cent. of water, and the lean of rich beef 74 to 78, so that 100 lbs. of the lean of rich mutton is composed of 70 lbs. to 73 lbs. of water, and from 27 to 30 lbs. of the solid materials of flesh; while the lean of rich beef contains 74 lbs. to 73 lbs. of water, and from 22 lbs. to 26 lbs. of

solid matter. Now from these data it consequently follows, that if we can add 100 lbs. of rich lean mutton to the carcass weight of our fattening sheep, we only require from 27 lbs. to 30 lbs. of the solid flesh-forming matter to do so, or rather perhaps we should say, only 30 lbs. of the dry solid food is used up in the manufacture of 100 lbs. of rich, juicy, lean mutton; and 26 lbs. in the production of a like increase of a rich, juicy, lean beef. On the other hand, fat contains but a small percentage of water; so that nearly the whole weight of the superfluous amount of fat now produced under the obese system of fattening is from the solid part of the food. Such is the contrast; and when we come to strike a pecuniary balance between the two systems, the difference in favour of the production of rich lean meat on the natural system will be found to exceed what some may at first sight imagine.

The above data, we have in the next place to observe, has chiefly reference to the flesh of young growing animals; the proportion of elementary substances, or of the proximate principles of the flesh, remaining nearly the same when the animal is slaughtered, as when it was put up to fatten for the shambles. In practice, however, such data are often exceptional; for after the ox or the sheep has attained maturity of growth, the weight of bone, muscular tissue, and other parts remain nearly stationary; so that when a full grown, but lean animal, is put up to fatten, the increase that takes place in the weight of the lean meat added during the process of fattening contains a larger proportion of water. In the case of fattening sheep, previously quoted, some thirty per cent. of solid matter of the food was used up in the formation of the albumen, fibrine, gelatine, osmazome, and the other solid substances composing the flesh. But in the case of the full grown sheep, the solid materials of the food used up, in forming the increase in the weight of the flesh, do not amount to so much—say, for the sake of illustration, from ten per cent. of this increase is water, including the blood, lymph, and juice of the flesh. In the case of the full grown lean ox, a corresponding difference is experienced in favour of the consumption and conversion of water, along with condiment, into rich juice, for the shambles. In other words, increase of weight is comprised of the rich juice of the flesh—beef or mutton, as the case may be—with the corresponding increase that takes place in the blood and lymph, to preserve the normal equilibrium of the fluids.

The practical question, when comparatively viewed, lies between the manufacture of the rich juice of lean meat, and the manufacture of the tubfuls of superfluous rough fat, unfit for human food, that go from the butchers to the tallow chandler, with the advantages and disadvantages experienced under the two practices or systems now in operation of fattening

cattle. In other words, we have in the above an illustration of the old question of "black gravy *versus* white gravy," which engrossed so much of the attention of the agricultural mind towards the close of the last century, and during the early part of the present. Our fathers and grandfathers, for example, knew the difference between the two systems of fattening in question, viz., the natural system, handed down to them by previous generations, and the obese system of fattening on oilcake, and other feeding materials of an abnormal character, that began to be practised and generally adopted in their own times. At that period, a very erroneous notion prevailed relative to the dietic value of the fat of beef and mutton, for it was considered the most nutritive and valuable portion of the meat; indeed, this fallacious opinion was common fifty years ago. Thus says a writer of the period (Lawrence): "In regard to the flesh of animals, and its proper state for human food, I apprehend we have long been in error, and the current of fashion still runs strong for its continuance; it is the presumption that fat is the most valuable part of the carcass, and that a propensity to the laying on of fat, is the most, or rather the only valuable property in cattle." Thus supported, the obese system ("white gravy") "carried the bell" against its older rival (black gravy); but now that public opinion is changed as to the dietic value of fat, and that rich lean meat fetches twice the price of rough fat in the market, and requires less feeding material to produce it, the old natural system of fattening is again coming into favour, because under it we can produce not only an increase in the flesh or lean portion of our beef and mutton for the shambles, but also at the same time a sufficiency of finely flavoured fat, mixed or engrained with the lean: whereas the obese system is diametrically opposed to the growth of flesh, or of an increase in the weight of lean meat, its tendency being calculated to produce atrophy of muscle, with a predominance of coarse, patchy fat, the consumption of feeding materials required to produce a given amount of carcass weight being often more than twice that under the other or natural system, a difference of result which is easily explained on chemical grounds.

The difference between the natural system of fattening cattle and the obese system is thus so great, as hardly to leave any chance to the modern farmer but to adopt the former, the practice of his ancestors, under such improvements as the more scientific rationale of the current age may suggest. No doubt the latter is not without its advantages also, in the form of the rich manure it makes for the land. This is certainly no little consolation to its advocates, and we should regret to under-estimate its value one iota. But rich as the droppings of oilcake obese-fed animals may be, yet, when placed in the scales with the rich, juicy meat

of the natural system, they are found greatly wanting in yielding ready-money profits to the farmer. On the contrary, nothing could illustrate more forcibly the penny-wise and pound-foolish economy of the whole obese system, than the inestimable value its supporters put upon its rich manure—its valuable flesh-forming elements being converted not into flesh (?), but into dung, to fertilise the land, in order to grow feeding material to produce enough fat for the tallow chandler!

We have next to examine the feeding materials that supply the aliment which has been assimilated or used up in the process of increasing the carcass weight of the animal when fattened on the natural system, in order to ascertain what they are, and how to supply them in the food. In other words we have to solve the problem as to what the substances are that form the rich lean and fat of our fine beef or mutton, the rich juice-forming and fat-forming substances under the natural system of feeding cattle.

The protein elements of flesh, as they have been called, including fibrine, albumen, and gelatine, that are used up in the above process of increasing the carcass weight of the rich, juicy, lean meat in question, form but a very small per-centage of the whole proximate principles thus utilized from the food. It is therefore highly unscientific and illogical to designate the former (the protein elements) the flesh-forming materials of our cattle. As it is only the natural practice of fattening, and its general principles, that we are discussing, it will be unnecessary to quote the detailed analyses of rich, juicy flesh, in order to show the actual per-centage of protein matter in juxtaposition with the others. Indeed we have no trustworthy analyses to quote. It has already been shown that in meat of an ordinary description about three-fourths of the whole is water, and when we add to this that only about the half to two thirds of the solid materials of the flesh is protein, the reader will perceive that they (fibrine, albumen, and gelatine) only form about one-eighth to one-fifth of the whole weight; and we may observe, the greater the quantity the worse the argument. Indeed it would be much more correct to designate the osmazomic, kreatine and kreatinine, the lactic acid, phosphoric acid, inosinic acid, the lactate and phosphate of potash, the chloride of potassium, and other salts, the flesh-forming materials, as the formation of flesh is entirely dependent upon, or mainly due to, their presence. Thus (quoting the authority of Pereira and Majendie), "muscular flesh, in which gelatine, albumen, and fibrine are combined, according to the laws of organic Nature, and where they are associated with other matters, such as fats, salts, &c., suffices, even in a very small quantity, for complete and prolonged nutrition." "Dogs fed solely for 120 days on raw meat from sheep's heads, preserved their health and

weight during this period, the daily consumption never exceeding 300 grammes (= 4,630½ grains troy), and often being less than this quantity. But 1,000 grammes (= 15,434 grains troy) of isolated fibrine, with the addition of some hundreds of grammes of gelatine and albumen, were insufficient to support life." "What then," exclaims Majendie, "is the peculiar principle which renders meat so perfect an aliment? Is it the odorous and sapid matter that has this function, as seems probable? Do the salts, the trace of iron, the fatty matters, and the lactic acid contribute to the nutritive effect, notwithstanding they constitute so minute a portion of meat?" (*Pereira's Treatise on Food and Diet*). The opinion of this able chemist is thus plainly stated, that the peculiar function of the odorous and sapid properties of the meat is that which renders the whole alimentary. They (the odorous and sapid properties) are the flesh-forming materials, and this conclusion he deduces from the experiments made at the instance of the French Government, under the "Gelatine Commission." When dogs were fed exclusively on mutton, lard, and fatty matters, large quantities of fat were secreted, so that the animals increased the quantity of fat in their bodies, but rapidly experienced atrophy of muscle, &c., &c., so that they soon died. The dogs, in the above experiment, that were fed on isolated fibrine, albumen, and gelatine, lost both their lean and fat before they ceased to exist, thus leaving the practical conclusion manifest to the high alimentary and flesh-forming value of the condimental properties of food; while it is equally conclusive that the protein elements alone are not flesh-forming.

As it is with carnivorous animals so it is with herbivorous animals. If the flesh-forming elements of the food of the former are the odorous and sapid properties of the animal food they consume, so the flesh-forming elements of the food of the latter are the odorous and sapid properties of the vegetable food they consume. If we wish to produce heavy weights of coarse fat meat, comparatively unfit for human food, we have only to turn our sheep and neat cattle into the coarse, washy, insipid herbage of a water-meadow in summer, or to put them upon cake, hay, and turnips in winter, to obtain the solution of our problem; but if we, on the other hand, wish heavy weights of rich, juicy meat, with a sufficiency of finely flavoured fat, so as to render the whole carcass in the highest degree nourishing and economical, we must then give our fattening cattle food rich in those odorous and sapid properties of which such meat is formed. And more than this; for we must not only give feeding materials supplying those odorous and sapid properties natural to the chemical senses (smell and taste) of our cattle, according to their respective requirements, but such feeding materials must be free from noxious matter, or even an excess of

albuminous or oleaginous principles. In short, the food for our cattle should be not only normal in quality, but also in quantity; for it is now an authenticated fact that the normal flow of the gastric and other secretions of the alimentary canal will only digest the normal quantity of food required; consequently, that when animals are induced to eat larger quantities than natural, as under the obese system of feeding, gastro digestion is imperfect, and so are all other processes, digestive, alimentary, and excretory, in the animal economy. All the organs require a regular supply of their natural stimuli, including heat, light, &c., in order to enable them to perform their respective functions, and this is what they should have with the greatest impartiality to every function.

It is an easy matter thus to commit to paper a rough outline of the general dietic principles exemplified in the natural dietary of our cattle, when they are left to select their own food in rich pastures, but not such an easy affair to carry out those principles under the artificial system of husbandry which farmers must now everywhere pursue. The work, however, must be done, as it is the only one that will justify or remunerate the investment of capital, for the feeding of cattle is in reality a natural process, beyond our control as practical farmers, and therefore in its performance the Laws of Nature must be duly respected by all who propose supplying our butchers with beef and mutton rich in those odorous and sapid properties that give to beef, mutton, and pork a high money value in the estimation of the public. Thus, if the rich, juicy, lean meat fetch from eightpence to a shilling per pound, and the rough fat that is pared off and sent to the tallow chandler only fourpence per pound, and if, in the production of the latter, twice the quantity of solid food has been consumed by the cattle in the process of fattening, then the pecuniary difference in favour of the former is something considerable, for the coarse fat of the obese system costs the farmer twice as much as the rich juicy meat produced by the natural practice of feeding, while he only gets something like half the price for it (obese fat.)

In the olden time, when in-door winter fattening was the exception, and out-door summer fattening the rule, certain grounds were set apart for preparing cattle for the shambles, because experience had taught our ancestors that the herbage of such grounds was better adapted for fattening than the herbage of other grounds; and to this day such grounds are well known to practical men. They are not confined to our low-lying rich grazing meadows, but are to be found rather on elevated pastures, amongst the highland glens, south downs, and on some very rich corn-bearing lands, when subject to the plough. Now it is a well-known fact that those grounds that produce the greatest quantity of the finest quality of beef and mutton are not those that produce the largest

quantity of grass per acre. The natural and practical rule, on the contrary, is that the finer the quality of the herbage, and the richer it is of the odorous and sapid qualities required by the fattening animals, the less the quantity they consume to produce a given amount of carcase weight.

All who have paid attention to the practical data at issue, must therefore be satisfied with the soundness of the general principles advocated. No doubt the olden time was not without its examples of the twofold kind of obese fattening, of which sheep-rotting meadows, irrigated pastures, and all rapidly-grown etiolated herbage may be quoted as illustrations; but in all such cases the quantity of herbage consumed was, as it now is, immensely large, while the quality of the beef and mutton produced was and is coarse in the extreme, being devoid of the requisite supply of those odorous and sapid properties upon which their natural value depends. Thus, when the meat was deprived of its natural condiment, Majendi's dogs consumed four times the quantity which those did that were otherwise fed; so that the objection thus raised against the principles advocated turn out to be important practical data in their favour the moment they are examined and seen in their true practical light.

Individually considered, the odorous and sapid properties or condimental principles required by cattle in their daily food must, from the peculiar function they appear to serve in the animal economy, be estimated at a very high figure—a fact which of itself ought to encourage the investigation of the subject, as to what those condimental substances chemically and medically are, which different kinds of animals and qualities of feeding material require. That they are of a very diversified character, and that animals require changes when fed under artificial systems as they do when fed under the natural system, or when they are allowed to select for themselves, appears reasonable to conclude. When Nature furnishes so many practical lessons in every province of the kingdom, is it not the bounden duty of farmers to profit by her successful example?—W. B. *Farmer's Magazine*.

MEANS BY WHICH THE ACTION OF AUXILIARY MANURES CAN BE RENDERED MORE IMMEDIATE.

The speedy action of auxiliary manures is a question of very considerable importance at all times to the cultivators of the soil, but is one of more special interest in such seasons as the present, when the means to procure manures have been much curtailed by the smallness of returns derived from the sale of the preceding crop. Wherever it is possible, therefore, to restrict the outlay in the application of manures this spring, it is most de-

sirable to do so; but at the same time it is especially necessary to so regulate the quantities as to secure an abundant produce. It should be borne in mind, however, that whatever tends to render manures more immediately available to the crop to which they are applied reduces in a corresponding ratio their fertilising action on succeeding crops; and consequently it becomes necessary to apply them more frequently during the rotation. This specially holds good where the soil readily gives up the constituent elements of plants, and when the manures used are more or less adapted for the particular crop to which they were applied.

With the view of guiding those who propose to reduce the outlay in procuring manures by purchasing cheaper fertilisers, and by rendering these and the other manures formerly largely used more immediately available to the crops to which they are to be applied, the following remarks are submitted. As a rule, it is generally advisable to use a mixture of fertilisers in preference to one substance singly, and to mix these some time previous to their application to the soil. The action of the mixture is usually to produce a more uniform and healthy growth of the crop, which, as a consequence, renders it more productive than when only one auxiliary manure is applied.

For general purposes, Peruvian guano is the most efficient fertiliser, and formerly was much employed for the manuring of grass, root, and bulbous crops; but owing to its relatively higher price, compared with the price of other fertilisers, it has been replaced on many farms in whole or in part by cheaper manures, such as phosphatic guanos, phospho-Peruvian, and superphosphates. The crops produced from these cheaper fertilisers have been equally, and in some instances even more productive than when Peruvian guano alone was used. The demand for these manures has rapidly increased. The majority of those farmers who still give a preference to Peruvian guano could with advantage substitute in part at least other fertilizers, such as a mixture of two or more of those most generally used. To obtain the nitrogenous element, which is the most valuable constituent in Peruvian guano, nitrate of soda and sulphate of ammonia can be substituted with advantage; to furnish phosphoric acid, phosphatic guanos, superphosphates, and ground bones are all available, and contain a larger per centage of phosphoric acid than Peruvian guano. The kinds of manures and the proportions to mix should be mainly determined by the condition of the soil, the character of the crop to be grown, and the relative prices at which the fertilisers can be purchased. The constituents of the various fertilizers in general use, with the prices at which they are

sold, may afterwards be given; but at present attention is directed to the best means of rendering the constituents of manures more immediately available to the crops to which they are applied, by the use of sulphuric acid and by fermentation. By these means the action of the manures will be rendered more immediate, which will admit of smaller quantities being applied to the soil than were formerly used, and with the same results as regards the produce of the crops to which they are applied—whether to grass lands, corn, root, or bulbous crops.

The action of all auxiliary manures—guanos, ground bones, &c.—can be increased by a judicious treatment of them previous to their application to the land. The fertilizing action of Peruvian guano, and of all kinds of guano, can be rendered more immediate by the addition of sulphuric acid to one ton of guano. The acid should be regularly added, and the heap turned over, so that the whole of the guano may come in contact with the acid. Any free ammonia in the guano will be changed into sulphate of ammonia, and a portion of the phosphates present rendered soluble, preparatory to the application of guano to the soil. Ground bones and bone-dust may also be treated with a quantity of sulphuric acid. As sulphuric acid rapidly corrodes iron, wooden shovels and other implements formed of wood should be used in mixing the acid with the manurial substances. Fermentation will also reduce the bones to a soft mass. By the adding of water or liquid manure, fermentation will be induced, which, by still further reducing the bones, will greatly facilitate their immediate manurial action. As the water or liquid manure or stale urine, is added, the heap should be turned over several times, and the surface of the heap afterwards compressed by a shovel—a covering of sawdust, gypsum, or mould being afterwards applied to retain any ammonia which may be expelled during the process of fermentation. The same means may be adopted with guano heaps treated with acid. Where a mixture of fertilizers is to be prepared, each manure may be treated separately, or the whole may be mixed previous to the adding of the acid and water. Those who use guano and ground bones mixed for the potato and turnip crops can with advantage mix them several weeks previous to the period of application.

Nitrate of soda being relatively cheaper than Peruvian guano, a manure can be prepared—by mixing nitrate, ground bones, and phosphatic guano—which will be manurially equal to Peruvian guano, and the price per ton considerably less.

Common salt may be used in those cases where the mixtures are intended for particular crops, but especially where the situation

is inland. Salt is very essential for the growth of mangel, and its presence generally proves beneficial to all cereals and the leguminous crops. The quantity should in no case, however, exceed four or five cwts. per acre; and half this quantity will generally prove sufficient for all crops, with the exception of mangel, for which the maximum quantity of five cwts. may be allowed, if the land is not on the sea coast.

Sulphate of soda is also a very powerful fertiliser for several of the cultivated plants, more particularly the potato. It is, however, very seldom employed as a fertiliser, and those who experiment with it would confer a favour on agriculturists generally were they to report the result of their experiments. Sulphate of magnesia also acts powerfully on the growth of the potato as well as on several of the other cultivated plants. When it is used along with sulphate of soda, equal weights of which may be added to the other manures in forming a compost. Two to two and a half cwts. per acre of each sulphate is sufficient.

By examining the constituents of plants, particularly the ashes, a knowledge can be obtained of the manures which will act most beneficially on the growth of the various cultivated crops—*North British Agriculturist*.

TRANSPLANTING TOBACCO PLANTS.

Many of those to whom we have distributed tobacco seed, have expressed doubts that the seed in one paper should be sufficient to plant an acre of ground; but when they learned that each paper contained ten thousand seeds which were to be first planted in a seed bed, and then transplanted to the distance of two feet apart, their doubts were at an end. Although no one of our readers will be likely to raise tobacco to that extent, yet the process is the same for a larger or smaller quantity, and accordingly the following hints on transplanting are given:—

Presuming that the seed distributed to our readers has been planted in a hot-bed, or in boxes of earth placed in-doors, and that it is progressing towards the state at which it should be transplanted, these rules are to be observed. Prepare the plat where you are to transplant it, by manuring the ground well, and working it fine and deep, and as soon as the seedlings are the size of cabbage plants, that is, as soon as they have four leaves and are four to six inches high, they are ready for transplanting. This is done in precisely the same way as with cabbages, and requires no more skill. They should be placed two feet apart, and the operation should be done in damp weather or immediately after a rain. If hot weather occurs after they are planted out, the plants must be protected by a light

covering of paper, dry leaves, or straw; and they should not be allowed to suffer from moisture. Dead or weak plants must be removed, and replaced by healthy ones, hence, a supply should be kept in the hot-bed until this difficulty is past.—*Maine Farmer*.

SEED, SOIL, AND CULTURE OF SORGHUM

The committee appointed by the Ohio Sorghum Convention, to report on the above topics, made their report as follows:

“Your Committee on seed, soil, and Cultivation, report that in their view the best variety of seed for all purposes, is the Sorghum, or Chinese cane, especially for sirup. For granulation, they recommend the Imphee called Oomsee-a-na, which they think identical with that which is now mis-called Otahe-tan. As a very early variety they propose the kind of Imphee called Nee-a-za-na, though this last variety is not generally desirable.

“*Soil*—Good wheat land is considered the best soil for this cane. The particular composition of this soil should be sandy, inclined to limestone, with a sufficiency of clay to hold the soil tolerably compact.

“*Cultivation*—The soil should be worked deep, thoroughly pulverised and rolled firm. Plant in check-rows, the same distance apart as corn. Cultivate flat and thoroughly, till the plants are three feet high, not afterwards. Plant as early as practicable.”

THE LAWS OF CULTURE OF THE LAND ACCORDING TO LIEBIG.

(Concluded from page 138.)

If an average crop of corn takes from the soil per hectare 32 kilos. of potash and 20 kilos. of phosphoric acid, a crop half as large again would require potash and phosphoric acid in proportion: that is to say, 48 kilos of the first and 30 kilos. of the second; and it is the same with other nutritive principles. Some nutritive principles are found in the soil in such quantities, that there is no fear of their being exhausted. Such are iron, lime and magnesia. These elements nearly all belong to the mineral substances which compose the arable bed of the earth, and they only need to be dissolved to render them available to the plants. The mellowing of the soil with stable dung, and manures rich in carbon and azote, contributes powerfully to dissolve these principles. Other aliments of plants, namely potash and phosphate, are found only in very limited quantities in the earth, and they will soon be exhausted in the soil unless they are restored to it, by the use of other manures from those above named.

All plants draw from the air a part of their nourishment, and strictly speaking, there are no crops which sustain the soil, still less enrich it.

Clover is reckoned amongst those crops that improve the soil, yet it is difficult safely to repeat it every sixth year in the same land. We cannot obtain two good crops of vetches successively on the same field. Plants are sometimes sown for the purpose of burying them green when they are in full vegetation; but the soil does not become the richer for it; at most, the nutritive principles contained in the soil become by this means more soluble. The soil is only enriched by the substances which plants draw from the air, and these substances do not contribute in any respect to the fertility: they only help to hasten the dissolution of the solid substances which are found in the earth, and which serve for the nourishment of plants.

The fodder plants do not leave the soil richer than before. Even if they return to the earth as dung, they do but restore to that earth under another form its constituent principles. The trefoils offer to agriculture an immense advantage: their roots run down to such a depth that they seek their nourishment in the subsoil, and the manure they produce serves afterwards to enrich the upper bed of the soil; they are a means of putting at the disposal of the cereals the fertilizing principles contained in the subsoil.

The fertility of a farm cannot be increased by the culture of fodder plants alone. The culture of these fodder plants has also its natural limits; the moment that the trefoils have exhausted the subsoil they no longer succeed.

Every cultivator sells with his produce, under the form of grain and cattle, a part of the principles necessary for the nourishment of his land; and if he does not in another way restore to the earth these principles sold by him, whether by the use of bones or ashes, or by purchasing oilcake, or disposes of hay produce by natural meadows, then necessarily the land must become gradually poorer, until it will be wholly unproductive.

This restoring to the land what has been taken from it, does not in general take place with us in Germany. We not only sell to the foreigner corn and cattle, but England has already carried off from the soil of Germany, to import them at home, millions of quintals (cwt.) of bones. The excrements of men, which run into the rivers and go from thence into the sea, occasion another loss at least as great. Taking for granted that the excrements of a million men living in the towns are lost; admitting further that excrements of one man suffice to produce $3\frac{1}{2}$ kil. of grain, it follows that this million of men annually cause the loss of the means of producing 3,500,000 kilos. of grain, and in twenty-five years we find the enormous sum of 87,000,000 quintals of grain lost to the country.

In the middle ages, before the thirty years' war, Germany fed almost as numerous a population with the triennial system as it does at the present time. The result was, the production

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was no longer in proportion to the population. They introduced the system of alternate culture, of roots, fodder plants, and trefoil. The production increased in an astonishing manner. But now they already speak of exhausted fields, worn out by the growth of clover; and intelligent farmers assert that the return of the crops is gradually diminishing. Would it be possible for us to supply the wants of the population now with the triennial system?

The action of manures is often very capricious, but only in appearance. If a manure is not efficacious, the cause is in the ground. If we give to a piece of ground phosphorous, when it requires potash, no effects will be produced; and, on the other hand, if I give potash to land which requires phosphate, I shall do no good. There must exist a certain analogy between the different elements necessary to the plant, and it is when this analogy exists that the elements of the nutrition of plants exert their whole action. Stable dung, the normal manure, does not produce everywhere the same results. In one soil it raises the productions one-tenth, whilst in another it increases it one-third—a proof that it is not the dung alone which produces the crops, but that it acts in concert with the earth and the nutritive substances of the plants it contains. Different opinions have been given upon the manner of treating dung. Some advise taking it directly from the stable to the fields; others advise that it should be left to rot in a pit. Everything depends upon the manner in which we employ the dung, and the nature of the soil with which we have to do: *there is not in agriculture one good absolute rule; everything depends upon circumstances.*

Manure acts in two ways—by the principles that it contains, which serve for the nourishment of plants, and by its chemical and physical action; that is to say, by its influence, by means of the carbon and ammonia which it contains, upon the decomposition of the nutritive substances that are found in the soil, and by the raising of temperature which it causes during its putrefaction.

The insoluble substances in dungs, which serve for the nourishment of plants, do not escape by fermentation; they are found as well in decomposed dung as in fresh. In decomposed dung they are rendered more free, because in a more soluble state, and this is why decomposed dung operates more actively than fresh. By fermentation there escapes from dung a certain quantity of carbonic acid and ammonia. Whoever then wishes to obtain from dung all the physical and chemical action that it can produce, ought to carry it to the fields before it has fermented.

In clay the temperature is raised by the fermentation of dung; clay is rich in soluble principles serving for the nourishment of plants; for these reasons the use of unfermented dung is advisable.

Fresh dung is not so suitable to sand, which

contains but very small quantities of the substances to be decomposed, and in which the raising of the temperature is not necessary. In sand, therefore decomposed dung suits better, and it lasts a longer time in it.

The best manner of using dung would be to make a compost of it.

If we leave the dung spread upon a clay soil, the only inconvenience which results is that it does not warm the land. Upon a flinty soil there is some risk that a part of the fertilizing principles may be carried down by the waters into the subsoil.

The whole art of the farmer is reduced to setting in action the principles serving for the nourishment of plants which are found in the soil; in manufacturing from them grain, meal, &c., and in taking care that there should be restored to the earth, by a sufficient manuring, the solid principles that have been taken from it.

It is not with dung only that the farmer makes his produce. Dung only restores to the earth the fixed elementary principles which have been taken from it. There is a kind of circulation of the elementary principles which have been taken from it. There is a kind of circulation of the elementary principles of the plants that are found in the soil: they are changed into plants and cattle: the farmer sells especially the atmospheric principles; the solid principles that he sells at the same time must be replaced by the purchase of bones, ashes, &c., if he does not wish to impoverish his fields.

The new truths contained in the theory of Liebig are:

1. The principle that crops are in accordance with the eight inorganic and solid elementary substances of plants, which are found in the earth in a state of dissolution.

2. That the atmospheric principles, ammonia and carbonic acid, are not really less necessary to plants than the others, but that they are furnished in sufficient quantity by the air, *when the inorganic principles exist in sufficient quantity.*

3. The combination of carbonic acid and azote with the dung has for its principal results the dissolution of the nutritive substances of the plants which are in the soil, and the raising of the temperature.

4. The faculty which arable soil possesses of absorbing the nutritive principles of plants.

5. The manner in which plants draw their nourishment from the earth, by the cells, which are found at the extremity of the radicles.

One of the greatest merits of Liebig was that of having scientifically proved the injury that is done to agriculture by the loss of the excrements of the inhabitants of towns, and the damage sustained by a country in the exportation of grain and bones.

ADAM MULLER.

Agricultural Intelligence.

EIGHTEENTH EXHIBITION,

OF THE PROVINCIAL AGRICULTURAL ASSOCIATION,
TO BE HELD AT KINGSTON ON MONDAY, TUESDAY, WEDNESDAY, THURSDAY, AND FRIDAY,
SEPTEMBER 21, 22, 23, 24, & 25, 1863,

RULES AND REGULATIONS.

MEMBERSHIP.

1. The members of the Agricultural Societies of the several Townships within the County, or Electoral Division, or United Counties, wherein the Annual Exhibition may be held, and the members of the County or Electoral Division Society, shall be also members of the Association for that year, and have members' tickets accordingly; provided the Agricultural Societies of the said Townships, or the Society of the said County or Electoral Division or United Counties, shall devote their whole funds for the year, including the Government Grant, in aid of the Association, and shall pay over the same, accompanied with a list of the members of each such Society, to the Treasurer of the Association two weeks previous to the Exhibition.

2. The members of the Board of Agriculture, and of the Board of Arts and Manufactures, the Presidents and Vice-Presidents of all lawfully organized County Agricultural Societies, and of all Horticultural Societies, are members of the Association for Upper Canada, *ex-officio*. The payment of £1 and upwards constitutes a person a member of the Association for one year; and £10 for life, when given for that specific object, and not as a contribution to the local funds.

3. Members can enter articles for competition in every department of the Exhibition, at any time previous to the dates below mentioned, and all who become members previous to or on the Saturday preceding the show week will be furnished with tickets admitting them to the grounds during the whole time of the show, without additional charge.

ENTRIES.

4. No one but a member shall be allowed to compete for prizes except in class 44 sections 11 to 16 of class 47, and class 54.

5. All entries must be made on printed forms, which may be obtained of the Secretaries of Agricultural Societies, or of Mechanics' Institutes, free of charge. These forms are to be filled up and signed by the exhibitor, enclosing a dollar for membership, and sent to the Secretary of the Association, Board of Agriculture, Toronto, previous to, or on the following named dates:—

6. *Horses, Cattle, Sheep, Swine, Poultry*—Entries in these classes must be made by forwarding the entry form, as above mentioned, filled up, and member's subscription enclosed, on or before Saturday, August 15th, five weeks preceding the show.

7. In the classes of Blood Horses and pure bred cattle, full pedigrees, properly certified,

must accompany the entry. No animal will be allowed to compete as pure bred, unless they possess regular Stud or Herd Book pedigrees, or satisfactory evidence be produced that they are directly descended from such stock. In the class of Durham cattle particularly, no animal will be entered for competition, unless the pedigree of the same be first inserted in the English or American Herd Book, or in the Upper Canada Stock Register, kept at the office of the Board of Agriculture.

8. *Grain, Field Roots, and other Farm Products, Agricultural Implements, Machinery, and Manufactures generally*, must be entered previous to or on Saturday, August 29th, three weeks preceding the show.

9. *Horticultural Products, Ladies' Work, the Fine Arts, &c.*, may be entered up to Saturday, September 12th, one clear week preceding the show.

10. Exhibitors are particularly requested to take notice that it is absolutely requisite that the entries be made at the dates above mentioned, in order to afford sufficient time to examine the entry papers, and to correspond with parties, where necessary, for the correction of errors and omissions.

11. In the live stock classes, the entry must in every instance be made in the name of the *bona fide* owner; and unless his rule be observed, no premium will be awarded, or if awarded will be withheld.

12. In all the other classes, entries must be made in the names of the producers or manufacturers only.

13. In the Agricultural and Horticultural department the competition is open to exhibitors from any part of the world, with the exception of some classes of fruit.

14. In the Arts and Manufacturers department, no article can be entered for competition unless it be the growth, product, or manufacture of Canada; and no money premium will be awarded except in accordance with this rule; articles of foreign manufacture, however, may be entered for exhibition only, and will be reported upon by the judges, according to their merits, or certificates awarded them, if deserving. Manufacturers are requested to furnish with their articles exhibited, the quantity they can produce, or supply, and the price, for the information of the Judges; whose decision will be based on the combination of quality, style, and price, and the adaptation of the article to the purpose or purposes for which it is intended.

15. No person shall be allowed to enter for exhibition more than one specimen in any section of a class, unless the additional article be of a distinct named variety, or pattern, from the first. This rule not to apply to animals, but to apply to all kinds of grain, vegetable products, fruit, manufactured articles, &c., in which each additional specimen would necessarily be precisely similar to the first.

16. On the entry of each animal or article, a

card will be furnished the exhibitor specifying the class, the section, and the number of the entry, which card must remain attached to such animal or article during the exhibition.

TRANSPORT OF ARTICLES, PLACING THEM ON EXHIBITION, AND CHARGE OF THEM WHILE THERE.

17. All articles for exhibition, must be on the grounds on Monday, September 21st, except live stock, which must be there not later than Tuesday 22nd, at noon. Exhibitors of machinery and other heavy articles, are requested to have them on the grounds as far as possible during the week preceding the show.

18. Exhibitors must provide for the delivery of their articles upon the show ground. The Association cannot, in any case, make provision for their transportation, or be subjected to any expense therefor, either in their delivery at, or return from the grounds; all the expenses connected therewith must be provided for by the Exhibitors themselves.

19. Articles not accompanied by their owners may be addressed to the care of the Superintendent of the exhibition, who will receive them on their being delivered at the grounds, but in no case will such articles be brought on the grounds and placed on exhibition, except by and at the expense of the owners or their authorised agents.

20. Exhibitors, on arriving with their articles will apply to the superintendent of the grounds, who will be stationed within the entry gate, and will inform them where the articles are to be placed.

21. Exhibitors will, at all times, give the necessary personal attention to whatever they may have on exhibition, and at the close of the show take entire charge of the same.

22. No articles or stock exhibited will be allowed to be removed from the grounds, till the close of the exhibition, upon the delivery of the President's address, on Friday afternoon, under the penalty of losing the premiums.

23. While the Directors will take every possible precaution, under the circumstances, to ensure the safety of articles sent to the exhibition, yet they wish it to be distinctly understood that the owners themselves must take the risk of exhibiting them; and that should any article be accidentally injured, lost or stolen, the Directors will give all the assistance in their power towards the recovery of the same, but will not make any payment for the value thereof.

STEAMBOATS, RAILROADS, CUSTOMS.

24. The Association will make arrangements with Steamboat and Railroad proprietors for carrying articles and passengers at reduced rates.

25. Arrangements will be made with the Customs department for the free entry of articles for competition.

ADMISSION TO THE GROUNDS.

26. Tickets from the Secretary's Office will be furnished each person becoming a member previous to or on Saturday, September 19th, which will admit himself only, free to every

department of the exhibition, during the Show. Life members admitted free throughout the Exhibition.

27. No member's tickets will be issued after the above last mentioned Saturday evening, but those issued up to that time will be good till the close of the show.

28. Necessary attendants upon stock and articles belonging to exhibitors, will be furnished with admission tickets with their names written upon them, which ticket will be good at the *Exhibitor's Gate only*, during the show.

26 The admission fees to non-members, on Tuesday and Wednesday, will be half-a-dollar, and on Thursday and Friday, a quarter-dollar, each time of entering through the gates.

30 Tickets of admission to those who are not members, will be issued on and after Tuesday morning, at 25 cents each,—two such tickets to be given up at the gates each time of admission, on Tuesday and Wednesday, and one such ticket on Thursday and Friday, in accordance with the above rates. Children under fourteen years of age, half price. Carriages to pay one dollar each admission; each occupant, except the driver, to be also provided with the usual admission ticket. Horsemen half-a-dollar.

JUDGES AND THEIR DUTIES.

31 The judges will be appointed by the council of the Association previous to the Exhibition, and will receive a circular informing them of the fact and inviting them to act.

32. The judges are invited to report themselves at the Secretary's office, presenting their circular of appointment, immediately on their arrival at the grounds.

33. The judges will meet, at the committee room on the grounds, on Tuesday, September 22nd at 1 o'clock, A. M., to make arrangements for entering upon their duties, and will then be furnished with the committee books containing the numbers of the entries in each class.

34. No person shall act as a judge in any class in which he may be an exhibitor.

35. In addition to the stated premiums offered for articles enumerated in the list, the judges will have the power to award discretionary premiums for such articles, not enumerated, as they may consider worthy, and the Directors will determine the amount of premium.

36. In the Fine Arts and Mechanical Department, Diplomas will be awarded—in addition to the money prizes—to any specimen evincing great skill in its production, or deemed otherwise worthy of such a distinction, on its being recommended by the Judges and approved of by the Committee to whom all such matters shall be referred.

37. In the absence of competition in any of the Classes, or if the Stock or articles exhibited be of inferior quality, the Judges are instructed to award only such premiums as they think the articles deserving of. They will exercise their discretion as to whether they will award the first, second, or any premium.

38. Each award must be written in a plain,

careful manner, on the blank page opposite the number of the entry; and the reasons for the award should be stated when convenient.

39 No person will be allowed to interfere with the judges while in the discharge of their duties. *Exhibitors so interfering will forfeit their rights to any premium to which they might otherwise be entitled.*

DELEGATES, THE ANNUAL MEETING, &C.

40. Delegates and members of the Press are requested and expected to report themselves at the Secretary's office immediately on their arrival.

41. The Annual Meeting of the Directors of the Association will take place on the grounds on Friday morning, Sept. 25th, at 10 o'clock.

42. Delegates from County Societies desiring to obtain a portion of the Canada Company Prize wheat for their Counties, will please apply to the Secretary for it before leaving the exhibition, and take it with them from thence.

THE GENERAL SUPERINTENDENT.

43. The General Superintendent will have the entire supervision of the grounds and the arrangements of the exhibition. He will have an office upon the ground, where all persons having inquiries to make in relation to the arrangements will apply.

PAYING THE PREMIUMS.

44. The Treasurer will be prepared to commence paying the premiums on Saturday, Sept. 26th, at 9 a. m., and parties who shall have prizes awarded them are particularly requested to apply for them before leaving Kingston, or leave a written order with some person to receive them, stating the articles for which prizes are claimed.

45. Persons entitled to cash premiums must apply for them at the Secretary's office, who will give *Orders on the Treasurer* for the amount.

46. These orders must be endorsed, as they will be payable to *order*, not to *bearer*, and on presentation to the Treasurer, properly endorsed, will be paid either in cash or by cheque on the Bank.

47 Orders for premiums not applied for on Saturday as above will be given by the Secretary, and the amount forwarded by the Treasurer, on receipt of proper instructions.

MISCELLANEOUS.

48. Provender will be provided by the Association for live stock at cost price. For information Exhibitors will apply to the Superintendent of the grain and fodder department at his office.

49. Auctioneers will be on the ground after the premiums are announced, for the purpose of selling any animal or article which the owner may wish to dispose of, and every facility will be afforded for the transaction of business.

50. In case the Directors shall require any particular information in reference to animals or articles taking first prizes, the owners will be expected to transmit it when requested to do so.

PROGRAMME FOR THE WEEK.

1. MONDAY, Sept. 21st, will be devoted to the final receiving of articles for exhibition, and their proper arrangement. None but officers and members of the Association, judges, exhibitors, and necessary attendants will be admitted.

2. TUESDAY, 22nd. The judges will meet in the Committee Room at 10 A. M., and will commence their duties as soon as possible afterwards. As soon as they have made their awards, they will report to the Secretary, and will then be furnished with the prize tickets, which they are requested to place on the proper articles before dispersing. Non-members admitted this day on payment of 50 cents each time.

3. WEDNESDAY, 23rd. The judges of the various classes will complete their awards, and will place all of the prize tickets if possible. Admission this day the same as yesterday.

4. THURSDAY, 24th. All the remaining prize tickets not yet distributed by the judges will be placed upon the proper articles this morning, before 9 o'clock, if possible. The public will be admitted this day on payment of 25 cents by each person, each time of entering.

5. FRIDAY, 25th. The annual meeting of the Directors of the Association will take place at 10 A. M., in the Committee Room. The President will deliver the Annual Address at 2 P. M., after which the Exhibition will be considered officially closed, and exhibitors may commence to take away their property. A mission to-day the same as yesterday.

6. SATURDAY, 26th. The Treasurer will commence paying the premiums at 9 A. M. Exhibitors will remove all their property from the grounds and building. The gates will be kept closed as long as necessary, and none will be admitted except those who can show that they have business to attend to.

PRIZE LIST.

AGRICULTURAL DEPARTMENT.

LIVE STOCK, AGRICULTURAL AND HORTICULTURAL PRODUCTS, IMPLEMENTS, &c.

(Competition open to all the world, except as specified.)

MEDALS.—In all cases the winner of a first prize of \$40 will be entitled to the Association's Gold Medal, value \$40, instead, if he prefer it; and the winner of the first prize of \$10, or upwards will be entitled to the Silver Medal, at \$10, if he prefer it, with the difference in money.

HORSES.

CLASS I.—BLOOD HORSES.

Sect.		\$	c.
1.	Best thorough-bred stallion.....	40	00
	2d do	25	00
	3d do	12	00

2.	Best 3 years old stallion.....	22	00
	2d do	14	00
	3d do	7	00
3.	Best 2 years old stallion.....	14	00
	2d do	10	00
	3d do	5	00
4.	Best yearling colt.....	8	00
	2d do	6	00
	3d do	4	00
5.	Best thorough-bred stallion of any age.....	Diploma.	
6.	Best 3 years old filly.....	18	00
	2d do	11	00
	3d do	7	00
7.	Best 2 years old filly.....	14	00
	2d do	10	00
	3d do	6	00
8.	Best yearling filly.....	8	00
	2d do	6	00
	3d do	4	00
9.	Best mare and foal, or evidence that the foal has been lost.....	22	00
	2d do	14	00
	3d do	6	00

10. Extra entries.

Pedigree to be produced in this class.

CLASS II.—AGRICULTURAL HORSES.

1.	Best stallion for agricultural purposes.....	40	00
	2d do	25	00
	3d do	12	00
2.	Best 3 years old stallion.....	22	00
	2d do	14	00
	3d do	7	00
3.	Best 2 years old stallion.....	14	00
	2d do	10	00
	3d do	5	00
4.	Best yearling colt.....	8	00
	2d do	6	00
	3d do	4	00
5.	Best agricultural stallion any age, Diploma		
6.	Best 3 years old filly	18	00
	2d do	11	00
	3d do	7	00
7.	Best 2 year old filly.....	14	00
	2d do	9	00
	3d do	4	00
8.	Best yearling filly	8	00
	2d do	6	00
	3d do	4	00
9.	Best brood mare and foal, or evidence that the foal has been lost.....	22	00
	2d do	14	00
	3d do	6	00
10.	Best span matched farm or team horses	20	00
	2d do	15	00
	3d do	10	00

11. Extra entries.

CLASS III.—ROAD OR CARRIAGE HORSES.

1.	Best roadster or carriage stallion, 4 years old and upwards	40	00
	2d do	25	00
	3d do	12	00
2.	Best do. 3 years old	20	00
	2d do	14	00
	3d do	7	00

3. Best do. 2 years old	14 00
2d do	10 00
3d do	5 00
4. Best yearling colt	8 00
2d do	6 00
3d do	4 00
5. Best stallion of any age.....	Diploma
6. Best French Canadian stallion.....	3 00
2d do	20 00
3d do	10 00
7. Best 3 years old roadster filly.....	18 00
2d do	11 00
3d do	7 00
8. Best 2 year old filly	14 00
2d do	9 00
3d do	4 00
9. Best yearling filly	8 00
2d do	6 00
3d do	4 00
10. Best brood mare and foal, or evidence of foal having been lost	22 00
2d do	14 00
3d do	6 00
11. Best pair of matched carriage horses	20 00
2d do	15 00
3d do	10 00
12. Best single carriage horse in harness	10 00
2d do	8 00
3d do	6 00
13. Best saddle horse	10 00
2d do	8 00
3d do	6 00
14. Extras.	

CLASS IV.—HEAVY DRAUGHT HORSES.

1. Best heavy draught stallion.....	40 00
2d do	25 00
3d do	10 00
2. Best 3 years old stallion.....	22 00
2d do	14 00
3d do	7 00
3. Best 2 year old stallion	14 00
2d do	10 00
3d do	5 00
4. Best yearling colt	8 00
2d do	6 00
3d do	4 00
5. Best draught stallion, any age.....	Diploma
6. Best 3 years old filly	18 00
2d do	11 00
3d do	6 00
7. Best 2 years old filly	14 00
2d do	9 00
3d do	4 00
8. Best yearling filly	8 00
2d do	6 00
3d do	4 00
9. Best brood mare and foal, or evidence that the foal has been lost	22 00
2d do	14 00
3d do	6 00
10. Best span of draught horses	20 00
2d do	15 00
3d do	10 00
11. Extra entries	

Horses shown as single carriage horses, as saddle horses, or as spans of team or carriage horses, must not be stallions.

No horse will be allowed to compete in more than one class or section, except when competing for the prize for the best horse of any age in his class, or for the best of any age or blood.

CLASS V.—THE PRINCE OF WALES' PRIZE.—HORSE OF ANY BREED.

For the Best Stallion of any age or blood, prize presented by His Royal Highness the Prince of Wales,.....\$60 00

CATTLE.

CLASS VI.—DURHAMS

1. Best bull 4 years old and upwards.....	\$36 00
2d do	24 00
3d do	16 00
2. Best 3 years old bull	32 00
2d do	20 00
3d do	12 00
3. Best 2 years old bull	24 00
2d do	16 00
3d do	8 00
4. Best one year old bull	20 00
2d do	12 00
3d do	7 00
5. Best bull calf (under 1 year)	16 00
2d do	10 00
3d do	6 00
6. Best bull of any age.....	Diploma
7. Best cow.....	20 00
2d do	12 00
3d do	8 00
8. Best 3 years old cow	16 00
2d do	10 00
3d do	6 00
9. Best 2 years old heifer.....	12 00
2d do	8 00
3d do	5 00
10. Best one year old heifer	10 00
2d do	6 00
3d do	4 00
11. Best heifer calf (under one year)	6 00
2d do	4 00
3d do	2 00
12. Extra entries.	

N.B.—A certificate of HERD BOOK PEDIGREE, or a sufficient reference to the Herd Book in which they are registered, will be required of all animals in the Durham class, along with or previous to the application to enter them for exhibit on. The pedigree of others should be as full and correct as possible.

CLASS VII.—DEVONS.

The list of Prizes the same as in Class VI.

CLASS VIII.—H RIFORDS.

Prizes the same as Class VI.

CLASS IX.—AYRSHIRES.

Prizes the same as Class VI.

CLASS X.—GALLOWAY, AND POLLED ANGUS, OR ABERDEEN CATTLE.

Prizes the same as Class VI.

CLASS XI.—GRADE CATTLE.

1. Best Grade cow	20 00
2d do	12 00
3d do	8 00

2. Best 3 years old cow	6 00
2d do	1 00
3d do	6 00
3. Best 2 years old heifer	12 00
2d do	8 00
3d do	5 00
4. Best one year old heifer	10 00
2d do	6 00
3d do	4 00
5. Best heifer calf (under 1 year)	6 00
2d do	4 00
3d do	2 00

THE FERGUS CUP.

6. Best grade heifer, not more than two years old on March 1, 1863, the produce of a pure bred Durham Bull, having a recorded pedigree, and of a cow of any breed, not more than one remove from thorough bred. Prize presented by Hon. J. A. Fergusson Blair.

SILVER CUP.

7. Extra entries.

DIPLOMAS will be awarded to the Breeders or Importers of bulls and stallions which take First Prizes, when their names and residences are given.

The Judges shall ascertain, in deciding on bull calves in any of the foregoing classes, whether the animal has been suckled or raised by pail, and make allowances accordingly. The exact age of young animals must be stated on the cards, and will be taken into consideration by the Judges in making their awards; and any person understating the age of an animal will forfeit the premium to which he might otherwise be entitled.

A statement to be produced to show the breeding of animals in class xi.

Young cattle may compete, if the exhibitor thinks fit, in an older class than that to which they properly belong; but no animal will be allowed to compete in more than one of the foregoing sections, except for the Medals, or where all classes and ages compete together, or in the herds.

Cows in any of the above classes must be giving milk at the time of exhibition, or be evidently well gone in calf.

An animal will not be allowed to compete as a three year old cow unless she has had a calf, or is evidently in calf, but a two-year old animal having had a calf will be allowed to compete as a two-year old heifer, if the owner thinks fit.

Prizes will be awarded to animals of other breeds than those above mentioned, if deemed worthy.

CLASS XII—FAT AND WORKING CATTLE, ANY BREED.

Sect.		£	s.	d.
1. Best fat ox or steer		30	00	
2d do		20	00	
3d do		12	00	
2. Best fat cow or heifer		3	00	
2d do		2	00	
3d do		12	00	
3. Best yoke of working oxen		20	00	
2d do		12	00	
3d do		8	00	

4. Best yoke 3 year old steers	16	00
2d do	10	00
3d do	6	00

5. Best team of oxen, not less than ten yoke from one township, the property of any number of persons. 40 00

Fat Cattle and Fat Sheep can be exhibited only by persons who have owned and fed them at least six months previously.

SHEEP, LONG WOOLLED.

CLASS XIII.—LEICESTERS.

1. Best ram, two shears and over	16	00
2d do	10	00
3d do	5	00
2. Best shearing ram	16	00
2d do	10	00
3d do	5	00
3. Best ram lamb	8	00
2d do	4	00
3d do	2	00
4. Best 2 ewes, two shears and over ..	16	00
2d do	11	00
3d do	6	00
5. Best 2 shearling ewes	12	00
2d do	8	00
3d do	4	00
6. Best 2 ewe lambs	6	00
2d do	4	00
3d do	2	00

CLASS XIV.—COTSWOLDS.

Prizes the same as in Class XIII.

CLASS XV.—OTHER LONG WOOLLED SHEEP, NOT LEICESTERS, OR COTSWOLDS.

Prizes the same as in Class XIII.

SHEEP,—MEDIUM WOOLLED.

CLASS XVI.—SOUTH DOWNS.

Prizes the same as in Class XIII.

CLASS XVII.—CHEVIOTS.

Prizes the same as in Class XIII.

CLASS XVIII.—OTHER MEDIUM WOOLLED SHEEP, NOT SOUTHDOWNS OR CHEVIOTS.

Prizes the same as in Class XIII.

SHEEP—FINE WOOLLED.

CLASS XIX.—MÉRINOS AND SAXONS.

Prizes the same as in Class XIII.

CLASS XX.—OTHER FINE WOOLLED SHEEP, NOT MÉRINOS OR SAXONS.

Prizes the same as in Class XIII.

CLASS XXI.—FAT SHEEP.

Sect.		£	s.	d.
1. Best two fat wethers		12	00	
2d do		8	00	
3d do		4	00	
2. Best two fat ewes		12	00	
2d do		8	00	
3d do		4	00	
3. Extra entries in sheep.				

Sheep that have been shown in any other classes cannot compete as fat sheep.

Sheep will not be allowed to compete in any class with more than the present season's growth of wool upon them.

If necessary, to decide the merits of different sheep satisfactorily, the judges shall have the power of causing them to be shorn upon the ground.

PIGS—LARGE BREEDS.

CLASS XXII. YORKSHIRES.

1. Best Boar, 1 year and over.....	15 00
2d do	10 00
4d do	6 00
2. Best Boar, under 1 year.....	10 00
2d do	6 00
3d do	4 00
3. Best Breeding Sow, 1 year and over. 10 00	
2d do	7 00
3d do	4 00
4. Best sow, under 1 year old.....	5 00
2d do	4 00
3d do	3 00

CLASS XXIII—LARGE BERKSHIRES.

Prizes the same as in Class XXII.

CLASS XXIV.—ALL OTHER LARGE BREEDS.

Prizes the same as in Class XXII.

PIGS—SMALL BREEDS.

CLASS XXV. SUFFOLKS.

Prizes the same as in class XXII.

CLASS XXVI. IMPROVED BERKSHIRES.

Prizes the same as in class XXII.

CLASS XXVII—ALL OTHER SMALL BREEDS.

Prizes the same as in class XXII.

In the classes of Pigs, the *precise age* of the animal is to be *stated on the cards*.

With a view of encouraging argely the importation of improved stock, the exhibitor of any male animal imported into this Province from Europe since the last Exhibition, which shall take the first prize in any of the above classes, will be paid three times the amount of the premium offered in the list; the exhibitor of any female animal imported from Europe within the same time, taking the first prize, will be paid double the amount offered; the exhibitor of any male animal imported into the Province from any part of America within the same time, taking the first prize, will be paid double the amount of prize offered; and of any female animal imported within the same time, and taking the first prize, one-half addition to the amount of prize offered in the list. Such animals to be the *bona fide* property of persons residing in Upper Canada. Satisfactory evidence must have been given at the time of making the entry that the animal has been imported within the time named, or the increased prize will not be paid.

CLASS XXVIII.—POULTRY, &c.

Sec't.	\$ c.
1. Best pair white dorkings.....	4 00
2d do	2 00

2. Best pair of spangled do.....	4 00
2d do	2 00
3. Best pair of black Polands.....	4 00
2d do	2 00
4. Best pair of white Polands.....	4 00
2d do	2 00
5. Best pair of golden Polands.....	4 00
2d do	2 00
6. Best pair of silver Polands.....	4 00
2d do	2 00
7. Best pair of game fowls.....	4 00
2d do	2 00
8. Best pair of Jersey blues	4 00
2d do	2 00
9. Best pair of Cochins China, Shanghai, Canton, or Bramah Pootra fowls. 4 00	
2d do	2 00
10. Best pair of black Spanish fowls.... 4 00	
2d do	2 00
11. Best pair of Java fowls	4 00
2d do	2 00
12. Best pair of Bolton bays	4 00
3d do	2 00
13. Best pair of Bolton grays.....	4 00
2d do	2 00
14. Best pair of Hamburg fowls.....	4 00
2d do	2 00
15. Best pair of Doninique.....	4 00
2d do	2 00
16. Best pair of feather-legged bantams. 2 00	
2d do	1 00
17. Best pair of smooth-legged bantams 2 00	
2d do	1 00
18. Best pair of turkeys, (white).....	4 00
2d do	2 00
19. Best pair of turekys, coloured) 4 00	
2d do	2 00
20. Best pair of wild turkeys.....	4 00
2d do	2 00
21. Best pair of large geese.....	4 00
2d do	2 00
22. Best pair of Bremin geese.....	4 00
2d do	2 00
23. Best pair of Chinese geese	4 00
2d do	2 00
24. Best pair of Muscovy ducks.....	4 00
2d do	2 00
25. Best pair of common ducks	4 00
2d do	2 00
26. Best pair of Aylesbury ducks.....	4 00
2d do	2 00
27. Best pair of Poland ducks.....	4 00
2d do	2 00
28. Best pair of Rouen ducks	4 00
2d do	2 00
29. Best pair of Guinea fowls	4 00
2d do	2 00
30. Best pair of pea fowls.....	4 00
2d do	2 00
31. Best collection of pigeons.....	4 00
2d do	2 00
32. Best lot of poultry in one pen, and owned by the exhibitor	6 00
33. Best collection of poultry entered in the various classes by one exhibitor 8 00	
34. Best pair of rabbits.....	2 00
35. Best lot of rabbits	4 00
36. Other entries.	

Exhibitors will have to provide their own

coops, and are recommended to have them about three feet cube in size, for convenience of arrangement on the grounds.

AGRICULTURAL PRODUCTIONS.

CLASS XXIX. GRAINS, SEEDS, &c.

1. The Canada Company's prize for the best 25 bushels of Fall Wheat, the produce of Canada West, being the growth of the year 1863. Each sample must be of one distinct variety, pure and unmixed, of the best quality for seed, and not to be tested merely by weight. The prize to be awarded to the actual grower only of the Wheat, which is to be given up to and become the property of the Association, for distribution to the County Societies for seed.....100 00

2nd	do by the Association..	40 00
3rd	do	20 00

The winners of the 2nd and 3rd prizes to retain their wheat.

This wheat will be ready for distribution after the annual meeting. The delegates from such County Societies as desire to have a portion are requested to apply for it, and take it with them from the show ground, for immediate sowing, where practicable.

The winners of these prizes will be required to furnish the Secretary with a written statement of the nature of the soil, mode of preparation, the variety and quantity of seed, and time of sowing, manures, (if any used), produce per acre of grain, and any other particulars of practical importance, before being paid the amount of premium. Winners of prizes in the succeeding sections of this class will also be expected to furnish information when applied for.

Persons competing for the Canada Company's prize are requested to bring a sample in the straw, pulled from the ground when ripe, with the roots remaining attached.

The Board reserves the right of purchasing part or the whole of first prize samples of grain and seeds at the market value.

2. Best two bushels of white winter

wheat	10 00
2d do	8 00
3d do	6 00
4th do	4 00

3. Best two bushels of red winter wheat

2d do	8 00
3d do	6 00
4th do	4 00

4. Best 2 bushels of white spring wheat

2d do	8 00
3d do	6 00
4th do	4 00

5. Best two bushels red spring wheat..

2d do	8 00
3d do	6 00
4th do	4 00

6. Best 2 bushels of barley, (2 rowed).

2d do	4 00
3d do	2 00
4th do	Vol. Transactions

7. Best two bushels of barley (6 rowed)	6 00
2d do	00
3d do	2 00
4th do	Trans
8. Best two bushels rye	6 00
2d do	4 00
3d do	2 00
4th do	Trans
9. Best two bushels of oats (white) ...	6 00
2d do	4 00
3d do	2 00
4th do	Trans.
10. Best two bushels of oats (black)....	6 00
2d do	4 00
2d do	2 00
4th do	Trans.
11. Best two bushels of field peas	6 00
2d do	4 00
3d do	2 00
4th do	Trans.
12. Best two bushels of marrowfat peas.	6 00
2d do	4 00
3d do	2 00
4th do	Trans.
13. Best two bushels of tares.....	6 00
2d do	4 00
3d do	2 00
4th do	Trans.
14. Best bushel of white field beans....	6 00
2d do	4 00
3d do	2 00
4th do	Trans.
15. Best two bushels Indian corn in the ear (white)	6 00
2d do	4 00
3d do	2 00
4th do	Trans.
16. Best two do (yellow).....	6 00
2d do	4 00
3d do	2 00
4th do	Trans.
17. Best bushel of timothy seed.....	6 00
2d do	4 00
3d do	2 00
4th do	Trans.
18. Best bushel clover seed	6 00
2d do	4 00
3d do	2 00
19. Best bushel of Alsike clover seed...	6 00
2d do	4 00
3d do	2 00
20. Best bushel of hemp seed.....	6 00
2d do	4 00
3d do	2 00
21. Best bushel of flax seed.....	6 00
2d do	4 00
3d do	2 00
22. Best bushel of mustard seed.....	6 00
2d do	4 00
3d do	2 00
23. Best Swedish turnip seed, from transplanted bulbs, not less than 20 pounds.....	6 00
2d do	4 00
3d do	2 00
24. Best 14 lbs white Belgian field carrot seed.....	6 00
2d do	4 00
3d do	

25. Best 12 lbs long red mangel wurzel seed.....	6 00	15 Best 12 roots red globe mangel wurzel	3 00
2d do.....	4 00	2d do.....	2 00
3d do.....	2 00	3d do.....	Trans.
26. Best 12 lbs yellow globe mangel wurzel seed.....	6 00	16 Best 12 roots yellow globe mangel wurzel.....	3 00
2d do.....	4 00	2d do.....	2 00
3d do.....	2 00	3d do.....	1 00
27. Best bale of hops, not less than 112 pounds.....	20 00	17. Best 12 roots long yellow mangel wurzel.....	3 00
2d do.....	12 00	2d do.....	2 00
3d do.....	8 00	3d do.....	Trans.
28. Best bushel of horse or tick beans..	6 00	18. Best 12 roots of khol rabi.....	3 00
2d do.....	3 00	2d do.....	2 00
3d do.....	Trans.	3d do.....	1 00
29. Best bushel of buckwheat.....	4 00	19. Best 12 roots of sugar beet.....	3 00
2d do.....	2 00	2d do.....	2 00
3d do.....	Trans.	3d do.....	1 00
30. Best bushel of Millet.....	4 00	20. Best 20 roots parsnips.....	3 00
2d do.....	2 00	2d do.....	2 00
3d do.....	Trans.	3d do.....	Trans.
31. Best bushel of Hungarian grass seed	4 00	21. Best 20 roots of chicory.....	3 00
2d do.....	2 00	2d do.....	2 00
3d do.....	Trans.	3d do.....	Trans.
32. Extra entries.		22. Best 2 large squashes for cattle....	3 00
GLASS XXX.—ROOTS AND OTHER FIELD CROPS.		2d do.....	2 00
1. Best bushel of pink-eyed potatoes .	3 00	3d do.....	1 00
2d do.....	2 00	23. Best 2 mammoth field pumpkins....	3 00
3d do.....	1 00	2d do.....	2 00
2. Best bushel cup potatoes.....	3 00	3d do.....	Trans.
2d do.....	2 00	24. Best 4 common yellow field do....	3 00
3d do.....	1 00	2d do.....	2 00
3. Best bushel garnet Chilis,.....	3 00	3d do.....	Trans.
2d do.....	2 00	25. Best 20 lbs of tobacco leaf, growth of Canada West.....	3 00
3d do.....	1 00	2d do.....	2 00
4. Best bushel white potatoes.....	3 00	d do.....	Trans.
2d do.....	2 00	36. Best broom corn brush, 28 lbs.....	3 00
3d do.....	Trans.	3d do.....	Trans.
5. Best bushel red do.....	3 00	The Canada Company's Prize for Flax,	
2d do.....	2 00	27. Best 1 2 lbs of flax, scutched.....	24 00
3d do.....	Trans.	2d do by the Association....	16 00
6. Best bushel blue.....	3 00	3d do.....	8 00
2d do.....	2 00	The Canada Company's Prize for Hemp.	
3d do.....	Trans.	28. Best 112 lbs of Hemp.....	16 00
7. Best bushel of any other sort.....	3 00	2d do by the Association.....	12 00
2d do.....	2 00	3d do.....	6 00
3d do.....	Trans.	29. Other entries.	
8. Best collection of Field Potatoes, a peck of each sort named.....	4 00	[The roots in the above class to be certified as of field culture by the Exhibitor]	
2d do.....	3 00	Roots of other varieties than those above named will receive prizes if worthy	
3d do.....	2 00	The names of the different varieties of wheat or other grain, roots, &c, must be inserted by each exhibitor in his list of entries.	
9. Best bushel Swede turnips.....	3 00	HORTICULTURAL PRODUCTS.	
2d do.....	2 00	CLASS XXXI.—FRUIT.	
3d do.....	1 00	Nurseryman's List. Canada only. Competitors can receive a premium only in one section of each fruit.	
10. Best bushel white globe turnips....	3 00	1. Best 30 varieties apples, correctly named, six of each.....	8 00
2d do.....	2 00	2d do.....	6 00
3d do.....	Trans.	2. Best 20 varieties do, correctly named, six of each.....	5 00
11. Best bushel Aberdeen yellow turnips	3 00	2d do.....	3 00
2d do.....	2 00		
3d do.....	Trans.		
12. Best 20 roots red carrots.....	3 00		
2d do.....	2 00		
3d do.....	1 00		
13. Best 20 roots white or Belgian carrots	3 00		
2d do.....	2 00		
3d do.....	1 00		
14. Best 12 roots mangel wurzel (long red)	3 00		
2d do.....	2 00		
3d do.....	1 00		

3. Best 15 varieties do, correctly named, six of each.....	3 00
2d do.....	2 00
4. Best 20 varieties pears, correctly named, three of each.....	8 00
2d do.....	6 00
5. Best 10 varieties do, correctly named, three of each.....	5 00
2d do.....	3 00
6. Best 10 varieties plums, correctly named, six of each.....	5 00
2d do.....	3 00
7. Best 3 varieties do correctly named, six of each.....	4 00
2d do.....	2 00
8. Best 10 varieties peaches, correctly named, grown in open air, six of each.....	4 00
2d do.....	3 00
9. Best 6 varieties do, correctly named, grown in open air, six of each.....	3 00
2d do.....	2 00
10. Best collection grapes, grown in open air, two bunches each, named.....	5 00
2d do.....	4 00
11. Best display of fruit, the growth of exhibitor, distinct from other entries, three specimens of each sort.....	8 00
2d do.....	6 00
3d do.....	4 00

Fruit Growers' List. Canada only. Nur-
serymen excluded from this Class. Com-
petitors can receive a premium only in one
section of each fruit.

12. Best 20 varieties apples, correctly named, six of each.....	\$6 00
2d do.....	4 00
3d do.....	2 00
13. Best 10 varieties do., correctly named, six of each.....	\$4 00
2d do.....	3 00
3d do.....	2 00
14. Best 6 varieties dessert apples cor- rectly named, six of each.....	3 00
2d do.....	2 00
3d do.....	Vol. Trans.
15. Best 6 varieties, cooking do., cor- rectly named, six of each.....	3 00
2d do.....	2 00
3d do.....	Vol. Trans.
16. Best 10 varieties pears, correctly named, three of each.....	5 00
2d do.....	3 00
3d do.....	2 00
17. Best 6 varieties do., correctly named, three of each.....	5 00
2d do.....	3 00
3d do.....	Vol. Trans.
18. Best 12 pears of one variety.....	3 00
2d do.....	2 00
3d do.....	Vol. Trans.

19. Best collection plums, correctly named, six of each.....	4 00
2d do.....	3 00
3d do.....	2 00
20. Best 12 plums, one variety, correctly named.....	2 00
2d do.....	1 00
3d do.....	Vol. Trans.
21. Best 6 varieties peaches, correctly named; grown in open air, 6 of each.....	4 00
2d do.....	3 00
3d do.....	2 00
22. Best 12 peaches one variety, cor- rectly named, grown in open air.....	2 00
2d do.....	1 00
3d do.....	Trans.
23. Best collection grapes, grown in open air.....	6 00
2d do.....	4 00
3d do.....	2 00
24. Best 3 bunches do, one variety, cor- rectly named.....	3 00
2d do.....	2 00
3d do.....	Trans.

General list of Fruits, Canada, open to all.

25. Best 12 Nectarines, one variety, named correctly, grown in open air.....	3 00
2d do.....	2 00
26. Best 12 Quinces.....	2 00
5d do.....	1 00
27. Best peck Cranberries, domestic cultivated.....	2 00
2d do.....	1 00
28. Best collection grapes, grown under glass, one bunch each, correctly named.....	6 00
2d do.....	4 00
2d do.....	2 00
29. Best 2 bunches black grapes, grown under glass, correctly named.....	4 00
2d do.....	3 00
3d do.....	2 00
30. Best 2 bunches white grapes, grown under glass, correctly named.....	4 00
2d do.....	3 00
3d do.....	2 00
31. Best green flesh melon.....	2 00
2d do.....	1 00
32. Best red or scarlet flesh melons.....	2 00
2d do.....	1 00
33. Best water melon.....	2 00
2d do.....	1 00

Domestic pure Wines

34. Best Isabella wine.....	Diploma.
35. Best Delaware wine.....	"
36. Best native Canadian grape wine.....	"
37. Best grape wine from any other sort.....	"
38. Best currant wine.....	"
39. Best raspberry wine.....	"
40. Best strawberry wine.....	"

41. Best blackberry wine..... “
 42. Best perry..... “
 43. Best cider..... “

Foreign Class.

44. Best collection of apples..... 5 00
 2d do..... 4 00
 45. Best collection of pears..... 5 00
 2d do..... 4 00
 46. Best collection of plums..... 5 00
 2d do..... 4 00
 47. Best collection of peaches..... 5 00
 2d do..... 4 00
 48. Best collection of open air grapes..... 5 00
 2d do..... 4 00
 49. Extra entries, fruits

DR. BEADLE'S PRIZES :

Special prizes offered by the late Dr. Beadle of St. Catharines, and to be given by Mr. D. W. Beadle.

To any person, not a professional nurseryman, residing within the County of Ontario, or Durham, Victoria, Northumberland, Peterborough, Prince Edward, Hastings, Lennox, Addington, Frontenac, Leeds, Lanark, Grenville, Dundas, or Stormont, who shall exhibit the largest collection of really valuable pears, not more than six specimens of each variety, nor less than three varieties in each collection, each variety named, and shall with the entry make the written statement required below; a premium of *thirty five pear trees* of suitable size for planting, grown either upon the pear or quince stock, at the option of the exhibitor, and of such kinds as the exhibitor may select from the list of pear trees cultivated at these nurseries.

To the exhibitor of the second best collection, upon the same conditions, a premium of *fifteen pear trees*, with like privilege of choice to exhibitor.

The exhibitor of the third best collection, upon the same conditions and with the same privileges, a premium of *five pear trees*.

Each exhibitor to send with his entry a written statement, shewing the township, lot and concession where the fruit exhibited by him was grown; the nature of the soil; the stock, whether pear or quince; the hardihood of each variety and probable ability to endure the climate of his locality, and which of the varieties the exhibitor values most highly; such statement to be signed by the exhibitor, giving also his post office address.

The collections to be exhibited at the Provincial Fair, to be held in 1863, subject to the rules and regulations of the Agricultural Association, such entries to be distinct from all other entries. The Board of Agriculture to appoint two of the judges to decide upon the merits of the several entries, the third judge to be subject to appointment by Mr. Beadle.

CLASS XXXII.—GARDEN VEGETABLES.

- | | |
|---|------|
| 1. Best 12 roots of salsify..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 2. Best 3 heads brocoli..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 3. Best 3 heads cauliflower..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 4. Best 3 heads cabbage (summer)..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 5. Best 3 heads cabbage (winter)..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 6. Best 4 sorts winter cabbage, including savoys, 1 of each sort..... | 3 00 |
| 2d do..... | 2 00 |
| 3d do..... | 1 00 |
| 7. Best 3 heads red cabbage..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 8. Best 12 carrots for table, long red..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 9. Best 12 early horn carrots..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 10. Best 12 table parsnips..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 11. Best 6 roots of white celery..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 12. Best 6 roots of red celery..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 13. Best dozen capsicums (ripe)..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 14. Best collection of capsicums (ripe) 6 of each sort..... | 3 00 |
| 2d do..... | 2 00 |
| 3d do..... | 1 00 |
| 15. Best 3 egg plant fruit, purple..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 16. Best 12 tomatoes (red)..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 17. Best 12 tomatoes (yellow)..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 18. Best assorted collection of tomatoes, 3 each of large sorts, and 6 each of small sorts..... | 3 00 |
| 2d do..... | 2 00 |
| 3d do..... | 1 00 |
| 19. Best 12 blood beets, long..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 20. Best peck of white onions..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |
| 21. Best peck of yellow onions..... | 2 00 |
| 2d do..... | 1 50 |
| 3d do..... | 1 00 |

23. Best peck of red onions	2 00	14. Best floral ornament or design	5 00
2d do	1 50	2d do	4 00
3d do	1 00	3d do	3 00
23. Best 12 white turnips (table)	2 00	15. Best collection of verbenas, not less than 12 varieties	3 00
2d do	1 50	2d do	2 00
3d do	1 00	3d do	1 00
24. Best 12 yellow turnips (table)	2 00	16. Best 6 petunias	2 00
2d do	1 50	2d do	1 50
3d do	1 00	3d do	1 00
25. Best 12 ears sweet corn	2 00	17. Best collection perennial phloxes ..	2 00
2d do	1 50	2d do	1 50
3d do	1 00	3d do	1 00
26. Best and greatest variety of potatoes, half peck of each sort, named	3 00	18. Best 6 hardy shrubs, spikes in flower ..	2 00
2d do	2 00	2d do	1 50
3d do	1 00	3d do	1 00
27. Best 3 squashes (table)	2 00	19. Best collection of Hollyhocks	2 00
2d do	1 50	2d do	1 50
3d do	1 00	3d do	1 00
28. Best and greatest variety of vegetables, (distinct from other entries) each kind named	4 00	20. Best display of plants in flower, distinct from other entries	10 00
2d do	3 00	2d do	6 00
3d do	2 00	3d do	4 00
29. Extra entries.		21. Best collection of native plants, dried and named	5 00
CLASS XXXIII.—PLANTS AND FLOWERS.			
1. Best dozen dahlias, named	2 00	2d do	3 00
2d do	1 50	3d do	2 00
3d do	1 00	22. Best specimen of useful and ornamental-rustic work for the garden ..	4 00
2. Best and largest collection of dahlias ..	5 00	2d do	3 00
2d do	4 00	3d do	2 00
3d do	3 00	23. Extra entries	
3. Best bouquet of cut flowers (for table) ..	2 00	Competitors in classes 31, 31, and 32, are requested to deliver their various productions in a clean and proper state for exhibition.	
2d do	1 50	CLASS XXXIV.—DAIRY PRODUCTS, HONEY, BACON, &C.	
3d do	1 00	1. Best firkin of butter, in shipping order, not less than 56 lbs.	12 00
4. Best hand bouquet	2 00	2d do	10 00
2d do	1 50	3d do	8 20
3d do	1 00	4th do	6 00
5. Best collection of green-house plants, not less than 12 specimens, in flower	10 00	2. Best butter, not less than 28 lbs, in firkins, crocks, or tubs	8 00
2d do	6 00	2d do	6 00
3d do	4 00	3d do	4 00
6. Best 12 pansies	2 00	4th do	2 00
2d do	1 50	3. Best cheese, not less than 30 lbs.	10 00
3d do	1 00	2d do	8 00
7. Best 6 fuchsias, in flower	4 00	3d do	6 00
2d do	3 00	4th do	4 00
3d do	2 00	4. Best two Stilton cheeses, not less than 12 lbs each	10 00
8. Best collection of annuals in bloom ..	2 00	2d do	8 00
2d do	1 50	3d do	6 00
3d do	1 00	4th do	4 00
9. Best 6 cockscombs	2 00	5. Best honey, in the comb, not less than 10 lbs.	3 00
2d do	1 50	2d do	2 00
3d do	1 00	3d do	1 50
10. Best 6 balsams in bloom	2 00	4th do	Trans.
2d do	1 50	6. Best jar of clear honey	4 00
3d do	1 00	2d do	2 00
11. Best collection of asters	2 00	3d do	1 50
2d do	1 50	4th do	Trans.
3d do	1 00	7. Best 30 lbs maple sugar	3 00
12. Best collection of 10 weeks' stock ..	2 00	2d do	2 00
2d do	1 50	3d do	1 00
3d do	1 00		
13. Best collection of hybrid perpetual roses, not less than 12 blooms ..	3 00		
2d do	2 00		
3d do	1 00		

8. Best side of cured bacon.....	3 00	15. Best cider mill and press	12 00
2d	2 00	2d	8 00
3d	1 00	16. Best two-horse team waggon	12 00
9. Best ham, cured.....	3 00	2d	8 00
2d	2 00	3d	4 00
3d	1 00	17. Best two-horse spring market waggon	10 00
10. Extra Entries.		2d	7 00

Persons taking premiums on dairy products will be required to furnish statements of the mode of manufacture, including the breed and number of cows, size of farm, description of dairy premises, treatment of milk, salt used, quantity of produce, and any other practical information that they may be able to afford, before being paid the amount of premium.

CLASS XXXV.—AGRICULTURAL IMPLEMENTS,
WORKED BY HORSE OR OTHER POWER.

Sect.	\$	c.		
1. Best iron plough, diploma and.....	12	00	21. Best horse rake	4 00
2d	8	00	2d	3 00
3d	4	00	3d	2 00
2. Best wooden plough, diploma and.....	12	00	22. Best metal roller	11 00
2d	8	00	2d	8 00
3d	4	00	23. Best wooden roller	10 00
[The ploughs to be tested in the field, on the Tuesday, by a Committee appointed for the purpose, at the Exhibition; ease of draught, efficiency of work, and price, to be considered.]			2d	5 00
3. Best subsoil plough, diploma and.....	12	00	24. Best stump extractor.....	8 00
2d	8	00	2d	4 00
3d	4	00	25. Best reaping machine, diploma and	20 00
4. Best double shear trench plough.....	10	00	2d	12 00
2d	6	00	3d	8 00
3d	4	00	26. Best mowing machine, diploma and	20 00
5. Best double mould plough.....	10	00	2d	12 00
2d	6	00	3d	8 00
3d	4	00	27. Best combined mower and reaper, diploma and.....	20 00
6. Best pair of harrows.....	6	00	2d	12 00
2d	4	00	3d	8 00
3d	2	00	28. Best potato digger.....	3 00
7. Best horse-power thresher and separator, diploma and.....	20	00	2d	2 00
2d	12	00	3d	Trans.
3d	8	00	29. Best field or two-horse cultivator.....	12 00
8. Best grain drill, diploma and	12	00	2d	8 00
2d	8	00	3d	4 00
3d	4	00	30. Best horse hoe, single horse cultivator.....	4 00
9. Best straw cutter.....	5	00	2d	3 00
2d	4	00	31. Best post hole borer	12 00
3d	3	00	2d	8 00
10. Best smut machine	6	00	32. Best brick-making machine	10 00
2d	3	00	2d	6 00
11. Best portable grist mill.....	12	00	33. Best flax-dressing machine	30 00
2d	8	00	2d	20 00
3d	4	00	3d	10 00
12. Best grain cracker.....	8	00	34. Best machine for sinking field drains and laying in and covering tiles.....	60 00
2d	6	00	2d	40 00
3d	4	00	35. Best portable steam engine, for agricultural purposes, 6 to 10 horse power	50 00
13. Best corn and cob crusher	4	00	2d	30 00
2d	3	00	3d	20 00
3d	2	00	36. Best steam plough or cultivator, in operation on the ground (open to foreign competition).....	100 00
14. Best clover cleaning machine.....	12	00		
2d	8	00		
3d	4	00		

37. Best improved liquid manure drill, for drilling two or more rows of liquid, with turnips, mangels, &c., either on the ridge or flat.....	25 00
2d do	15 00

38. Extras.

CLASS XXXVI.—AGRICULTURAL TOOLS AND IMPLEMENTS, CHIEFLY FOR HAND USE.

1. Best fanning mill, diploma and	6 00
2d do	4 00
3d do	2 00
2. Best seed drill, or barrow	4 00
2d do	3 00
3d do	2 00
3. Best straw cutter	5 00
2d do	4 00
3d do	3 00
4. Best machine for cutting roots for stock	6 00
2d do	4 00
3d do	2 00
5. Best cheese-press	8 00
2d do	6 00
6. Best churn	3 00
2d do	2 00
7. Best garden, walk, or lawn roller ..	4 00
2d do	2 00
3d do	1 00
8. Best thistle extractor	2 00
2d do	1 00
3d do	Trans.
9. Best farm gate	3 00
2d do	2 00
3d do	Trans.
10. Best specimen farm fence, wood ..	3 00
2d do	2 00
3d do	Trans.
11. Best specimen wire fencing, not less than two rods, erected on the ground ..	8 00
2d do	6 00
2d do	4 00
12. Best wooden pump	4 00
2d do	3 00
3d do	2 00
13. Best half-dozen hay rakes	3 00
2d do	2 00
3d do	1 00
14. Best half-dozen manure forks	3 00
2d do	2 00
3d do	1 00
15. Best half-dozen hay forks	4 00
2d do	2 00
3d do	1 00
16. Best half-dozen scythe snaths	3 00
2d do	2 00
3d do	1 00
17. Best ox-yoke and bows	2 00
2d do	1 00
3d do	Trans.
18. Best grain cradle	2 00
2d do	1 00
19. Best half-dozen grain shovels	3 00
2d do	2 00
3d do	1 00

20. Best half-dozen iron [flat] shovels ..	3 00
2d do	2 00
3d do	1 00
21. Best half-dozen spades	3 00
2d do	2 00
3d do	1 00
22. Best half dozen steel hoes	3 00
2d do	2 00
3d do	1 00
23. Best half-dozen grass scythes	3 00
2d do	2 00
3d do	1 00
24. Best half-dozen cradle scythes	3 00
2d do	2 00
3d do	1 00
25. Best machine for making drain tiles, diploma and	20 00
2d do	10 00
26. Best set of draining tools	6 00
2d do	4 00
3d do	2 00
27. Best assortment of drain tiles	6 00
2d do	4 00
3d do	2 00
28. Best straw fork, wood	2 00
2d do	1 00
3d do	Trans.
29. Best implement or machine for cut- ting pulling, or otherwise harvest- ing peas, hand or horse power ..	10 00
2d do	5 00
30. Best 6 chopping axes	3 00
2d do	2 00
31. Best set horse shoes	2 00
2d do	1 00
32. Extra entries.	

CLASS XXXVII.—CATTLE FOOD—MANURES, AND MISCELLANEOUS.

1. Best specimen oil cake	4 00
2d do	2 00
2. Best specimen prepared food for cattle	4 00
2d do	2 00
3. Best specimen ground bones, for manure	4 00
2d do	2 00
4. Best specimen other artificial man- ure	4 00
2d do	2 00
5. Extra Entries.	

ARTS AND MANUFACTURES DEPARTMENT.

(Competition open to Canadian Exhibitors only.)

CLASS XXXVIII.—CABINET WARE, AND OTHER WOOD MANUFACTURES.

Cabinet Ware.

Sect.	\$	c.
1. Best Bed Room Furniture, set of, ..	10	00
2d do	6	00
2. Best Centre Table	7	00
2d do	4	00

3. Best Drawing Room Sofa	7 00
2d do	4 00
4. Best Drawing Room Chairs, set of ..	7 00
2d do	4 00
5. Best Dining Room Furniture, set of ..	8 00
2d do	4 00
6. Best Side Board	6 00
2d do	3 00
7. Best Wardrobe	5 00
2d do	3 00

Miscellaneous.

8. Best Coopers' Work	4 00
2d do	3 00
9. Best Corn Brooms, 1 doz.	2 00
2d do	1 00
10. Best Curled Hair, 10 lbs.	3 00
2d do	2 00
11. Best Handles for Tools for Carpen- ters, Blacksmiths, Gunsmiths, Watchmakers, &c., collection of ..	8 00
2d do	4 00
12. Best Joiner's Work, assortment of ..	8 00
2d do	4 00
13. Best Machine-wrought Moulding, and Flooring, 100 feet of each.	6 00
2d do	4 00
14. Best Shingles, two bundles of split ..	2 00
2d do	1 00
15. Best Turning in Wood, collection of specimens	6 00
2d do	4 00
16. Best Turned Hollow Wooden Ware, assortment of	4 00
2d do	3 00
17. Best Veneers from Canadian Woods, undressed	8 00
2d do	4 00
18. Best Veneers from Canadian Woods, dressed and polished	8 00
2d do	4 00
19. Best Wash Tubs and Pails, three of each, Factory made	4 00
2d do	2 00
20. Best Willow Ware, six specimens ..	4 00
2d do	2 00

21. Extra Entries

CLASS XXXIX.—CARRIAGES AND SLEIGHS, AND
PARTS THEREOF.

1. Best Axe, wrought iron	3 00
2d do	2 00
2. Best Bent Shafts, half a dozen	3 00
2d do	2 00
3. Best Bows, for carriage tops, two sets ..	3 00
2d do	2 00
4. Best Buggy, double seated	8 00
2d do	4 00
5. Best Buggy, single seated	7 00
2d do	4 00
6. Best Buggy, trotting	6 00
2d do	4 00
7. Best Carriage, two-horse, pleasure ..	12 00
2d do	7 00
8. Best Carriage, one-horse, pleasure ..	8 00
2d do	4 00

9. Best Child's Carriage	4 00
2d do	3 00
10. Best Dog Cart, single horse.	6 00
2d do	4 00
11. Best Express Waggon.	6 00
2d do	4 00
12. Best Hubs, two pairs carriage	3 00
2d do	2 00
13. Best Rims or Felloes, two pairs car- riage	2 00
2d do	1 00
14. Best Spokes, 1 dozen machine made carriage	3 00
2d do	2 00
15. Best Sleigh, two horse, pleasure	10 00
2d do	6 00
16. Best Sleigh, one-horse, pleasure.	8 00
2d do	4 00
17. Best Springs, one set steel carriage.	4 00
2d do	3 00
18. Best Sulky, trotting	5 00
2d do	3 00
19. Best Wheels, one pair of carriage, unpainted	3 00
2d do	2 00
20. Extra Entries.	

CLASS XL.—CHEMICAL MANUFACTURES AND
PREPARATIONS.*

1. Best Essential Oils, assortment of ..	6 00
2d do	4 00
2. Glue, 14 lbs	3 00
2d do	2 00
3. Best Isinglass, 1 lb.	3 00
2d do	2 00
4. Best Medical Herbs, Roots and Plants, native growth	12 00
2d do	7 00
5. Best Oils, Linseed and Rape, and other expressed kinds	6 00
2d do	4 00
6. Best Oil—Coal, Shale, or Rock	6 00
2d do	4 00
7. Best Oil, Neats' foot, half gallon ..	2 00
2d do	1 00
8. Best Printing Inks, an assortment ..	3 00
2d do	2 00
9. Best Varnishes, assortment of	6 00
2d do	4 00
10. Extra entries	

CLASS XLI.—DECORATIVE AND USEFUL ARTS,
DRAWINGS AND DESIGNS.

1. Best Architectural Design, with com- plete detail Drawings	10 00
2d do	6 00
2. Best Carving in Wood	6 00
2d do	4 00
3. Best Drawing of Machinery, perspec- tive	5 00
2d do	3 00

* All parties exhibiting in competition for prizes in this class, must deliver their goods to the Secretary of the Board of Arts and Manufactures, Toronto, by the 1st of September, with a view to having a proper analysis made prior to the Exhibition.

4. Best Decorative House Painting.....	5 00
2d do	3 00
5. Best Decorative Sign Writing, on Glass.....	4 00
2d do	2 00
6. Best Engraving on wood, with proof	5 00
2d do	3 00
7. Best Engraving on Copper with proof	5 00
2d do	3 00
8. Best Goldsmith's Work.....	5 00
2d do	3 00
9. Best Geometrical Drawing of Engine or Mill work, coloured.....	5 00
2d do	3 00
10. Best Lithographic Drawing.....	5 00
2d do	3 00
11. Best Lithographic Drawing, coloured	6 00
2d do	4 00
12. Best Mantlepiece in Marble.....	10 00
2d do	6 00
13. Best Map of Canada, Lithographed.	6 00
2d do	4 00
14. Best Mathematical, Philosophical and Surveyor's Instruments, col- lection of.....	15 00
2d do	10 00
15. Best Modelling in Plaster.....	5 00
2d do	3 00
16. Best Monumental Headstone.....	5 00
2d do	3 00
17. Best Picture Frame, ornamented gilt	5 00
2d do	3 00
18. Best Penmanship, business hand...	4 00
2d do	2 00
19. Best Penmanship, ornamental.....	4 00
2d do	2 00
20. Best Seal Engraving, collection of im- pressions	5 00
2d do	3 00
21. Best Sign Writing.....	4 00
2d do	2 00
22. Best Silversmith's Work.....	5 00
2d do	3 00
23. Best Stained Glass, collection of specimens	10 00
2d do	6 00
24. Extra entries	

CLASS XLII.—FINE ARTS.

Professional List—Oil.

1. Best Animals grouped or single.....	12 00
2d do	7 00
2. Best Historical Painting.....	12 00
2d do	7 00
3. Best Landscape, Canadian subject...	12 00
2d do	7 00
4. Best Landscape or Marine Painting, not Canadian subject	10 00
2d do	6 00
4. Best Marine Painting, Canadian sub- ject	12 00
2d do	7 00
6. Best Portrait.....	10 00
2d do	6 00

In Water Colours.

7. Best Animals grouped or single.....	7 00
2d do	5 00
8. Best Flowers, grouped or single.....	7 00
2d do	5 00
9. Best Landscape, Canadian subject...	7 00
2d do	5 00
10. Best Landscape or Marine Painting, not Canadian subject.....	7 00
2d do	5 00
11. Best Marine Painting, Canadian sub- ject	7 00
2d do	5 00
12. Best Portrait.....	6 00
2d do	4 00

Pencil, Crayon, &c.

13. Best crayon, coloured.....	6 00
2d do	4 00
14. Best crayon, plain.....	6 00
2d do	4 00
15. Best crayon or Pencil Portrait.....	6 00
2d do	4 00
16. Best pencil Drawing.....	6 00
2d do	4 00
17. Best pen and Ink Sketch.....	6 00
2d do	4 00

Amateur List—Oil.

18. Best animals grouped or single...	8 00
2d do	5 00
19. Best historical Painting.....	8 00
2d do	5 00
20. Best landscape, Canadian subject...	8 00
2d do	5 00
21. Best landscape or Marine Painting, not Canadian subject	8 00
2d do	5 00
22. Best Marine Painting, Canadian sub- ject	8 00
2d do	5 00
23. Best Portrait.....	7 00
2d do	5 00

In Water Colours.

24. Best Animals grouped or single.....	7 00
2d do	5 00
25. Best Flowers, grouped or single.....	5 00
2d do	3 00
26. Best Landscape, Canadian subject...	7 00
2d do	5 00
27. Best Landscape, or Marine Painting, not Canadian subject	7 00
2d do	5 00
28. Best Marine View, Canadian subject	7 00
2d do	5 00
29. Best Portrait.....	6 00
2d do	4 00

Pencil, Crayon, &c.

30. Best Crayon, coloured.....	5 00
2d do	3 00
31. Best Crayon, plain.....	5 00
2d do	3 00
32. Best Crayon or Pencil Portrait....	5 00
2d do	3 00

33. Best Pencil Drawing.....	5 00
2d do.....	3 00
34. Best Pen and Ink Sketch	5 00
2d do.....	3 00

Photography.

35. Best Ambrotypes, collection of	6 00
2d do.....	4 00
36. Best Photograph Portraits, collection of, in duplicate, one set coloured	10 00
2d do.....	6 00
37. Best Photograph Portraits, collection of, plain	8 00
2d do.....	5 00
38. Best Photograph Landscapes and Views, collection of.....	8 00
2d do.....	5 00
39. Best Photograph Portrait in Oil ...	8 00
2d do.....	5 00
40. Extras	

CLASS XLIII.—GROCERIES AND PROVISIONS.

1. Best Barley, Pearl.....	3 00
2d do.....	2 00
2. Best Barley, Pot	3 00
2d do.....	2 00
3. Best Biscuits, an assortment of	6 00
2d do.....	4 00
4. Best Bottled Fruits, an assortment, manufactured for sale.	6 00
2d do.....	4 00
5. Best Bottled Pickles, an assortment, manufactured for sale.....	6 00
2d do.....	4 00
6. Best buckwheat flour.....	3 00
2d do.....	2 00
7. Best cayenne pepper from capsicums grown in the Province.....	2 00
2d do.....	1 00
8. Best chickory, 20 lbs. of	3 00
2d do.....	2 00
9. Best Indian corn meal.....	3 00
2d do.....	2 00
10. Best mustard, one jar.....	2 00
2d do.....	1 00
11. Best oatmeal.....	3 00
2d do.....	2 00
12. Best sauces for table use, an assortment, manufactured for sale	6 00
2d do.....	4 00
13. Best soap, one box of common	4 00
2d do.....	3 00
14. Best soaps, collection of assorted fancy	6 00
2d do.....	4 00
15. Best spices, ground, and assortment of	2 00
2d do.....	1 00
16. Best starch, 12 lbs. of corn	2 00
2d do.....	1 00
17. Best starch, 12 lbs. of flour.....	2 00
2d do.....	1 00
18. Best starch, 12 lbs. of potato.....	2 00
2d do.....	1 00

19. Best sugar, 20 lbs. of beet root....	3 00
9d do.....	2 00
20. Best sugar, 20 lbs. of sorghum	3 00
2d do.....	2 00
21. Best sugar, one loaf of refined	5 00
2d do.....	3 00
22. Best tobacco, 14 lbs. Canadian manufactured	4 00
2d do.....	3 00
23. Best wheat flour	5 00
2d do.....	3 00
24. Extra entries.	

CLASS XLIV.—LADIES' WORK.

1. Best bead work	3 00
2d do.....	2 00
3d do.....	1 00
2. Best braiding	3 00
2d do.....	2 00
3d do.....	1 00
3. Best crochet work	3 00
2d do.....	2 00
3d do.....	1 00
4. Best embroidery in muslin	3 00
2d do.....	2 00
3d do.....	1 00
5. Best embroidery in silk.....	3 00
2d do.....	2 00
3d do.....	1 00
6. Best embroidery in worsted	3 00
2d do.....	2 00
3d do.....	1 00
7. Best gloves, three pairs.....	2 00
2d do.....	1 00
3d do.....	0 50
8. Best guipure work.....	3 00
2d do.....	2 00
3d do.....	1 00
9. Best hair work	3 00
2d do.....	2 00
3d do.....	1 00
10. Best knitting	3 00
2d do.....	2 00
3d do.....	1 00
11. Best lace work	3 00
2d do.....	2 00
3d do.....	1 00
12. Best mittens, three pairs of woollen	2 00
2d do.....	1 00
3d do.....	0 50
13. Best needle work, ornamental	3 00
2d do.....	2 00
3d do.....	1 00
14. Best netting, fancy	3 00
2d do.....	2 00
3d do.....	1 00
15. Best plait for bonnets or hats, of Canadian straw	3 00
2d do.....	2 00
3d do.....	1 00
16. Best shirt, gentleman's.....	3 00
2d do.....	2 00
3d do.....	1 00

17. Best socks, three pairs of woollen ..	2 00	13. Best saw mill, in model or otherwise	6 00
2d do	1 00	2d do	4 00
3d do	0 50	14. Best sewing machine, manufacturing	8 00
18. Best stockings, three pairs of woollen	2 00	2d do	5 00
2d do	1 00	15. Best sewing machine, family	5 00
3d do	0 50	2d do	5 00
19. Best tatting	3 00	16. Best scales, platform	5 00
2d do	2 00	2d do	3 00
3d do	1 00	17. Best scales, counter	3 00
20. Best wax fruit	6 00	2d do	2 00
2d do	4 00	18. Best shingle-splitting machine	6 00
3d do	2 00	2d do	4 00
21. Best wax flowers	6 00	19. Best skates, an assortment of	6 00
2d do	4 00	2d do	4 00
3d do	2 00	20. Best smoke-consuming furnace, in	
22. Best wax shells, a collection of	6 00	operation on the ground	12 00
2d do	4 00	2d do	7 00
3d do	2 00	21. Best tools, for working in metals,	
23. Best worsted work	3 00	assortment of	12 00
2d do	2 00	2d do	7 00
3d do	1 00	22. Best turning lathe	5 00
24. Best worsted work (fancy) for fram-		2d do	3 00
ing	3 00	23. Best valves and gearing for working	
2d do	2 00	steam expansively, either in model	
3d do	1 00	or otherwise, principle of working	
25. Best worsted work (raised)	3 00	to be the point of competition	12 00
2d do	2 00	2d do	7 00
3d do	1 00	24. Extra entries.	

CLASS XLVI.—METAL WORK, (MISCELLANEOUS)

INCLUDING STOVES.

Miscellaneous.

XLV—MACHINERY, CASTINGS, AND TOOLS.			
1. Best blacksmith's bellows	4 00	1. Best coal oil lamps, an assortment.	8 00
2d do	00	2d do	5 00
2. Best castings for general machinery ..	10 00	2. Best cooper's smith's work, an assort-	
2d do	6 00	ment	7 00
3. Best cast wheel, spur or bevel, not		2d do	4 00
less than 50 lbs. weight	8 00	3. Best engineer's brass work, an as-	
2d do	5 00	sortment	6 00
4. Best castings for railways, railroad		2d do	4 00
cars and locomotives, assortment		4. Best fire arms, an assortment	7 00
of	12 00	2d do	5 00
2d do	7 00	5. Best files, collection of cast steel ..	3 00
5. Best hand power weaving loom	6 00	2d do	2 00
2d do	4 00	6. Best fire proof office safe	8 00
6. Best edge tools, an assortment	15 00	2d do	5 00
2d do	10 00	7. Best gas fittings, an assortment	7 00
7. Best engine, steam, stationary, of		2d do	5 00
one to four horse power, in opera-		8. Best iron fencing and gate, ornamen-	
tion	15 00	tal	7 00
2d do	10 00	2d do	5 00
8. Best engine, steam, stationary, five		9. Best iron work from the hammer,	
horse power and upwards, in		ornamental	6 00
operation	25 00	2d do	4 00
2d do	15 00	10. Best Iron work, ornamental cast ..	6 00
9. Best engine, hot air, one to four		2d do	4 00
horse power, in operation		11. Best locksmith's work, an assortment	7 00
on the ground	15 00	2d do	5 00
2d do	10 00	12. Best malleable hardware manufac-	
10. Best pump, in metal	5 00	tures, an assortment	7 00
2d do	3 00	2d do	5 00
11. Best refrigerator	6 00	13. Best nails, 20 lbs. of pressed	6 00
2d do	4 00	2d do	4 00
12. Best saws, an assortment	3 00	14. Best nails, 20 lbs. of cut	6 00
2d do	5 00	2d do	4 00

15. Best plumber's work, an assortment	6 00	12. Best clothes basket	2 00
2d do	4 00	2d do	1 00
16. Best screws and bolts, an assortment	6 00	13. Best fruit basket	2 00
2d do	4 00	2d do	1 00
17. Best sheet brass work, an assortment	7 00	14. Best hand basket	2 00
2d do	5 00	2d do	1 00
18. Best tinsmith's work, an assortment	6 00	15. Best mocassins, one pair of plain	2 00
2d do	4 00	2d do	1 00
19. Best tinsmith's lacquered work, an assortment of	6 00	16. Best mocassins, worked with beads or porcupine quills, one pair	3 00
2d do	4 00	2d do	2 00
20. Best wire work, an assortment	6 00	17. Extra entries.	
2d do	4 00		

Stoves.

21. Best cooking stove, for wood	6 00	1. Best harmonium	10 00
2d do	4 00	2d do	6 00
22. Best cooking stove, for coal	6 00	2. Best melodeon	6 00
2d do	4 00	2d do	4 00
23. Best furniture for cooking stove, one sett	4 00	3. Best organ, Church	20 00
2d do	3 00	2d do	12 00
24. Best hall stove, for wood	5 00	4. Best piano, square	15 00
2d do	3 00	2d do	10 00
25. Best hall stove, for coal	5 00	5. Best piano, grand	15 00
2d do	3 00	2d do	10 00
26. Best parlour stove, for wood	5 00	6. Best piano, cottage	10 00
2d do	3 00	2d do	6 00
27. Best parlour stove, for coal	5 00	7. Best violin	3 00
2d do	3 00	2d do	2 00
28. Best parlour grate	5 00	8. Best violin, double bass	3 00
2d do	3 00	2d do	2 00
29. Best parlour fire place complete, including setting of grate so as to economise fuel; and arrangement for ventilating room	6 00	9. Extra entries.	
2d do	4 00		

CLASS XLVII.—MISCELLANEOUS, INCLUDING POTTERY AND INDIAN WORK.

Miscellaneous.

1. Best artificial leg	6 00	1. Best Collection of Stuffed Birds of Canada classified and common and technical names attached	\$8 00
2. Best artificial arm	6 00	2d do	5 00
3. Best brushes, an assortment	6 00	2. Best collection of Native Fishes, stuffed or preserved in spirits, and common and technical names attached	8 00
2d do	4 00	2d do	5 00
4. Best model of a steam vessel	6 00	3. Best collection of Native Insects, classified, and common and technical names attached	8 00
2d do	4 00	2d do	5 00
5. Best model of a sailing vessel	6 00	4. Best Mammalia and Reptiles of Canada, stuffed or preserved in spirits, classified, and common and technical names attached, a collection	8 00
2d do	4 00	2d do	5 00
<i>Pottery.</i>		5. Best collection of Minerals of Canada, named and classified	8 00
6. Best filterer for water	3 00	2d do	5 00
2d do	2 00	6. Best collection of Native Plants, arranged in their natural families, and named	8 00
7. Best pottery, an assortment	8 00	2d do	5 00
2d do	5 00	7. Best stuffed Birds and Animals of any country, collection of	8 00
8. Best sewerage pipes, stoneware, assortment of sizes	10 00	2d do	5 00
2d do	6 00	8. Best collection of the Woods of Canada, in boards two feet long, one side polished; also a portion of the tree cut in sections, showing the bark	8 00
9. Best stoneware, an assortment	10 00	2d do	5 00
2d do	6 00		
10. Best slates for roofing	8 00		
2d do	5 00		

Indian Work.

11. Best buckskin mittens, one pair	2 00
2d do	1 00

9. Extra entries

CLASS L.—PAPER, PRINTING, BOOKBINDING,
AND TYPE.

1. Best Bookbinding (blank-book), as-
sortment of 5 00
2d do 3 00
2. Best Bookbinding (letter-press), as-
sortment of 5 00
2d do 3 00
3. Best Letter-press Printing, plain... 5 00
2d do 3 00
4. Letter-press Printing, ornamental. 5 00
2d do 3 00
5. Paper hangings (Canadian paper),
one dozen rolls, assorted 6 00
2d do 4 00
6. Best Papers—Printing, Writing,
and Wrapping, one ream of each. 6 00
2d do 4 00
7. Best Papers—Blotting and Colored,
one ream of each 6 00
2d do 4 00
8. Best Pocket books, Wallets, &c., an
assortment 6 00
2d do 4 00
9. Best Printing type, an assortment. 6 00
2d do 4 00
10. Extra Entries

CLASS LI.—SADDLE, ENGINE HOSE, AND TRUNK
MAKERS' WORK, AND LEATHER.*Saddlery, &c.*

1. Best Engine Hose and Joints, 2 $\frac{3}{4}$
inches diameter, 50 feet of copper
rivetted 6 00
2d do 4 00
2. Best Harness, set of double carriage 8 00
2d do 5 00
3. Best Harness, set of single carriage 6 00
2d do 4 00
4. Best Harness, set of team 5 00
2d do 3 00
5. Best Harness, set of Express 5 00
2d do 3 00
6. Horse Collars, an assortment 3 00
2d do 2 00
7. Best Hames, four pairs of iron car-
riage or gig 3 00
2d do 2 00
8. Best Hames, three pairs of iron cased
team or cart 3 00
2d do 2 00
9. Best Hames, six pairs of wooden
team 3 00
2d do 2 00
10. Best India rubber belting, Engine
Hose, &c., an assortment 6 00
2d do 4 00
11. Best Leather Leggings for Volun-
teers 3 00
2d do 2 00
12. Best Saddle, Ladies' full quilted.. 8 00
2d do 5 00

13. 1st Saddle, Ladies' quilted safe.. 6 00
2d do 4 00
14. Best Saddle, Gentleman's full quilted 7 00
2d do 4 00
15. Best Saddle, Gentlemen's plain
shafted 5 00
2d do 3 00
16. Best Trunks, an assortment 5 00
2d do 3 00
17. Best Valises and Travelling Bags,
an assortment 5 00
2d do 3 00
18. Whips and Thongs, an assortment. 6 00
2d do 4 00

Leather.

19. Best Belt Leather, 30lbs. 3 00
2d do 2 00
20. Best brown Strap and Bridle, one
side of each 3 00
2d do 2 00
21. Best Carriage cover, two skins... 3 00
2d do 2 00
22. Best Deer Skins, dressed.... 2 00
2d do 1 00
23. Best Harness Leather, two sides.. 3 00
2d do 2 00
24. Best Hog skins, for saddles, three. 4 00
2d do 3 00
25. Best Patent Leather, for carriage
or harness work, 20 feet 6 00
2d do 4 00
26. Best Skirting for Saddles, two sides 4 00
2d do 3 00
27. Extra entries.

CLASS LII.—SHOE AND BOOT MAKERS' WORK,
LEATHER, &c.*Boots, &c.*

1. Best Boots, Ladies', an assortment. 7 00
2d do 4 00
2. Best Boots, Gentlemen's sewed, an
assortment 7 00
2d do 4 00
3. Best Boots, pegged, an assortment. 5 00
2d do 3 00
4. Best Boot and Shoemakers' Tools,
an assortment 8 00
2d do 5 00
5. Boot and Shoemakers' Lasts and
Trees, an assortment 8 00
2d do 5 00
6. Best Shoemakers' Pegs, an assort-
ment 4 00
2d do 3 00
7. Best Shoes, India Rubber, an assort-
ment 6 00
2d do 4 00

Leather.

8. Best Calf Skins 3 00
2d do 2 00
9. Best Calf Skins; grained 3 00
2d do 2 00

10. Best Calf Skins, two morroco.....	3 00	16. Best Flannel, scarlet, one piece....	5 00
2d do	2 00	2d do	3 00
11. Best Cordovan, two skins of	3 00	17. Best Fur Cap and Gloves	4 00
2d do	2 00	2d do	3 00
12. Best Dog skins, two dressed.....	3 00	18. Best Fur Sleigh Robes, buffalo, wolf, and raccoon (an assortment)....	5 00
2d do	2 00	2d do	3 00
13. Best Kip Skins, two sides.....	3 00	19. Best Gloves and mits of any leather, an assortment	4 00
2d do	2 00	2d do	3 00
14. Best Kip Skins, grained	3 00	20. Best Horse Blankets, two pairs.....	5 00
2d do	2 00	2d do	3 00
15. Best Linings, six skins,	3 00	21. Best Kersey for horse clothing, one piece	5 00
2d do	2 00	2d do	3 00
16. Best Patent Leather for bootmakers, 20 feet	6 00	22. Best Linen Goods, one piece	5 00
2d do	4 00	2d do	3 00
17. Shesee Shirts six colored	3 00	23. Best Oxford Grey Cloth, one piece.....	5 00
2d do	2 00	2d do	3 00
18. Best Sole Leather, two sides.....	3 00	24. Best Overcoat of Canadian cloth....	4 00
2d do	2 00	2d do	3 00
19. Best Upper Leather, two sides.....	3 00	25. Best Satinet, black, one piece	6 00
2d do	2 00	2d do	4 00
20. Best Upper Leather, grained, two sides	3 00	26. Best Satinet, mixed one piece.....	5 00
2d do	2 00	2d do	3 00
21. Extra entries.		27. Best Sheep Skin Mts. dressed and colored, an assortment	6 00
CLASS LIII.—WOOLLEN, FLAX, AND COTTON GOODS; AND FURS AND WEARING APPAREL.			
1. Best Bags, from flax or hemp, the growth of Canada, one dozen....	5 00	23. Best Shirts, factory made, 3 each woollen and Angola	5 00
2d do	4 00	2d do	3 00
2. Best Bags, one dozen cotton	4 00	24. Best Silk and Felt Hats	5 00
2d do	3 00	2d do	3 00
3. Best Blankets, woollen, one pair.....	6 00	30. Best Stockings and Socks, factory made, woollen, three pairs of each	4 00
2d do	4 00	2d do	2 00
4. Best Calico, unbleached, one piece.....	5 00	31. Best Stockings and Socks, factory made, mixed woollen and cotton three pairs of each	4 00
2d do	3 00	2d do	2 00
5. Best Carpet, woollen, one piece.....	8 00	32. Best Suit of cloths of Canadian cloth	8 00
2d do	5 00	2d do	5 00
6. Best Carpet, woollen stair, one piece.....	6 00	33. Best Tweed, winter, one piece.....	6 00
2d do	4 00	2d do	4 00
7. Best Cassimere cloth, from Marino wool, one piece	6 00	34. Best Tweed, Summer, one piece.....	6 00
2d do	4 00	2d do	4 00
8. Best Cloth, fulled, one piece	6 00	35. Best Twine, linen and cotton, an as- sortment	3 00
2d do	4 00	2d do	2 00
9. Best Cloth, broad, one piece.....	6 00	36. Best Winsey, checked, one piece....	5 00
2d do	4 00	2d do	3 00
10. Best Counterpanes, two.....	5 00	37. Best woollen Cloths, Tweeds, &c., an assortment	10 00
2d do	3 00	2d do	6 00
11. Best Cordage, and Twines, from Can- adian flax or hemp, assortment of	10 00	38. Best woollen Shawls, Stockings, Drawers, Shirts, and Mts. an as- sortment	10 00
2d do	6 00	2d do	6 00
12. Best Check for horse collars, one piece	4 00	39. Best Yarn, white and dyed, one pound of each	2 00
2d do	3 00	2d do	1 00
13. Best Drawers, factory made, woollen, one pair	4 00	40. Best Yarn, fleecy woollen, for knitt- ing, one pound	2 00
2d do	3 00	2d do	1 00
14. Best Flannel, factory made, one piece	5 00		
2d do	3 00		
15. Best Flannel, not factory made, one piece	5 00		
2d do	3 00		

41. Best Yarn, cotton, two pounds. 2 00
 2d do 1 00
 42. Extra entries.

CLASS LIV—FOREIGN MANUFACTURES.

Foreign Articles will be admitted for exhibition only; but Certificates will be awarded to any article of worth or peculiar merit

GUELPH MAY FAIR.—It has got to be almost a proverb in town that May Fair never passes without a storm of some kind. This year was no exception to the rule for on Tuesday it snowed and rained without intermission and on Wednesday it was cold and bleak with sleety showers in the morning. It was therefore a poor fair in point of numbers, though, as might be expected from the small turn out of cattle, prices were good. About 120 were entered at the gate, some of them in prime condition, others only passable. Several yoke of good working oxen were brought in, and a few changed hands. Geo Hood bought from Mr. Evan Macdonald a steer for \$55; Mr. John Laidlaw sold to Lemon 2 cows for \$40 Mr. Jas. Laidlaw to the same 2 three year old steers for \$95: Mr. Jas Elliott 2 heifers to the same for \$84.50, Mr. J. s. Hasson to the same 8 head for \$160; Mr. Wilson 1 steer to Wald for \$50. Mr. Geo Hood bought 80 head of cattle from Mr. David Allan, but we did not learn the price. Mr. John West bought a cow for \$16, a cow and heifer for \$54. He sold three head for \$100. 1 yoke of oxen for \$100 and one steer for \$34. Mr. Tyson bought 2 from Mr. W. Jackson, Paisley Block \$94, 3 from Alex Mackie for \$100, 1 from Abram Wright, Jr. for \$33, one from Mr. Clements, Guelph, for \$34, one from Mr. Newman, Pikington, for \$25. He sold to Lemon 7 head for \$307.50.—Prices were generally very good one cow being sold by Mr. Peters, Eramosa, for \$5 a hundred live weight. The average price would be from \$4 to \$4.50 a hundred. Mr. Alexander of Eramosa, sold one yoke of oxen for \$100. Five car loads of cattle went off by the Grand Trunk on Wednesday night, and a large drove was shipped on Thursday morning. The Fair at Elora was poor, the day being so bad. Good prices were paid however and quite a lot of cattle were brought down by the drovers. The turn out of people was better than might have been expected, though far short of what it would have been, had the weather been fine. Several agricultural implements were exhibited, chief among them being Cos-et's Buck eye reaper and mower, and a sample of the same machines from Hamilton, Ackerman's and Thain's washing machines, Thain's new churn, which is on the lever principle, and Ackerman's churn which can be worked by dog power.

THE HORSE SHOW.

The show of stallions took place about 2 o'clock on the Fair ground. Entries were

made by the following proprietors of horses. R. Adams, Acton, Geo. Jefferson, Amaranth, Neil, McPhatter, Puslinch, Thos. Dunn, do., D. McTavish, Nassagaweya, P. Murphy, Guelph R. S. Geddes, Weston, John Hower, Guelph, N. Davis, do., Alex. McBaun, Beverley, W. Sallows, Guelph, Jos Black, Fergus. The Judges were Messrs Geo. Murton, Thos Hood, Jas. Cowan, Jas. Laidlaw, and Henry Smith. After a careful examination of the different animals the Judge awarded the prize of \$40 to the stallion owned by D. McTavish, Nassagaweya. —*Wellington Mercury.*

FLAX SCUTCHING.—The Flax machines lately invented in New England are sold at \$350, and will scutch from 2000 to 2500 lbs. of flax straw per day of 10 hours.

A new machine for scutching has recently been invented by Messrs. Mallory & Sanford, corner of Center and White Streets, New York, which is said to have been used in the flax mill at Union Village, Rensselaer Co., N. Y., with the following results:

"500 lbs. of flax straw gave 110½ lbs. dressed flax, 16 lbs. fine tow."

From this result a ton of straw, the ordinary produce of an acre in this country, will give 442 lbs. of dressed flax, worth \$110.50 at present prices, besides tow. The expense of scutching a ton, to the owner of a machine run by water power, is only the wages of two men for a day. —*Rural New Yorker.*

Horticulture.

TORONTO GARDENERS' IMPROVEMENT SOCIETY.

The Monthly Meeting of this Society was held in the Agricultural Hall, on the evening of April 20th. Present: Messrs. J. Fleming, Chairman; J. Gray, G. Vair, S. Ashby, C. W. Lawton, E. Townsend, C. Young, E. Lewis, S. Turner, J. Monaghan, and J. Forsyth.

The subject discussed was the pot culture of the grape vine.

Mr. Lawton, in introducing the subject, said, for pot culture, the vines ought to be raised from eyes, which may be had of well ripened wood of the previous year, cut in lengths of 3 inches, and stuck in a propagating pan, placed in a good heat. When well rooted, he would put them in pint pots, and keep them growing as strong as possible, shifting them into eight-inch pots, and from that into ten-inch, which would be the last shift for the season. The soil he would recommend, would be a rich turfy loam or sod, with a mixture of well-decomposed manure, charcoal, and bone-dust. The following year, which would be the season for fruiting, he would re-pot, without shaking the ball, or

disturbing the roots, into 12 or 15 inch pots, and water occasionally with manure water, until the fruit is swelled, avoiding, if possible, growing them under other vines. Regular attention to watering and good drainage, he considered very important to success. He would raise a fresh stock every year, and fruit but one season. When growing, it is necessary to keep the house as close as practicable, avoiding, especially, drafts of cold air. He believed the pot culture of the vine to be equally as profitable as any other method.

Mr. Ashby remarked that he thought it would be better to have the vines established in the fruiting pots the first season. To re-pot them, the year of fruiting, he considered opposed to the popular theory relative to the pot culture of other orchard trees, which are admitted to fruit best when the pots are full of roots.

Mr. Gray recommended propagating from layers, as an easier, quicker, and cheaper method of obtaining plants, which is often an object in Canada with amateurs and others, who may not have all desired conveniences at their command. If the operation of layering is successfully performed about the month of June, they will be well rooted and fit for separation from the parent stem in five weeks from the time of layering. The plants would be strong, and little difficulty could be had in getting the wood well ripened. He (Mr. G.) believed that many would be successful with layers who would fail in producing good plants from eyes.

Mr. Townsend, who has had some experience in fruiting the vine in pots, gave a statement of his general treatment, and attendant success. He struck the vine from single eyes, in bottom heat, in the month of February, using, in potting, a rich soil, but no manure, growing them in open spaces between other vines in the grapery. He had them shifted into the fruiting pots, which was half bushel size, in the month of July. When well established, and had attained a good growth, he exposed them on a south wall, where the wood hadened and ripened nicely, before severe frosts in the Fall. In pruning, he cut them back to six or eight feet, according to strengths, and trained them round three stakes, placed in a triangular form, in the pot. When started the second or fruiting season, he fed them well with liquid manures. Eleven vines, thus treated, showed 170 bunches of fruit; those he reduced to 70. One of nine bunches grown on the Victoria Humburgh weighed 2lb 13oz. This variety he considered one of the best for pot culture. The Black Humburgh and Black Spanish he had also found to be good varieties for this purpose.

Mr. Young believed the system of propagating by eyes far preferable to that of layers. If struck in a hot bed, where that is practicable, in the month of February, they will do well. His system is to strike in pure sand, and move them first into pint pots; from that to half-gallons,

and then into the fruiting pots, which, if so treated, may be done in the month of May.

THE CULTURE OF HYBRID PERPETUAL ROSES.

Mr. J. Gray read a paper upon the subject, which will be resumed at next monthly meeting. Also, the successful raising of cauliflowers.

After which the meeting adjourned.

J. FORSYTH, Sec.

FRUIT PLANTING.

TO THE EDITOR OF THE AGRICULTURIST.—Sir: As the season for planting trees is approaching, it may not be amiss for farmers, or those who have experience in fruit culture, to make the results of their experience known to each other, through your valuable *Journal*. A large number of fine trees, chiefly from the Hamilton Nurseries, were planted out in this vicinity last Spring, I planted about thirty, Apples, Plum, Pear, &c. They all grew well except three Apple trees, which had no appearance of putting forth buds, though they were watered and treated in the same way as the others. Hearing my brother say that he had one in a similar state last year, which he raised and planted again in the same place, though in a different position, and it grew well afterwards, I thought I could loose nothing by trying the experiment. I first took up one, and watered it well in putting it in again, and in a few days it put forth buds; and in a week the leaves were partly spread out, though the others which had not been moved, were apparently, almost dead. I then moved the others, and in a week they were also putting forth leaves, and in a few weeks could not be distinguished from the others. Probably in putting them in again they were turned round to a different position; though I did not pay particular attention to this. I would like, Sir, to hear from you or some of your correspondents, the cause of the above.

Yours truly,

JAMES TISDALE.

Wawanosh, April, 14th, 1863.

P. S. I may just say that the spring has now opened up here. On the 11th inst., by the heat through the day and the very heavy rain in the evening, the snow that remained in the bush disappeared; and people are now plowing. Some are yet busy in the manufacture of Maple sugar. The season for this branch of industry has not been very favourable.

J. T.

[The above letter came to hand too late for our last number. Eds.]

THE STRAWBERRIES IN SESSION.

TO THE EDITOR.—It was my good fortune to happen unexpectedly upon the unique gathering of many varieties of strawberries, and to

watch with deep interest this singularly beautiful and instructive affair.

Yours, REPORTER.

On May day, in a quiet glade, on the southern side of the New Forest, the strawberries, according to previous decision, held their annual assembly. Its purpose was to compare notes, and to receive suggestions for the promotion of the general good. The attendance was large. I note particularly Triomphe de gand, Jenny Lind, Sir Harry, Hovey, McAvoy Superior, Boston, Brighton Pine, and Longworth's Prolific. By previous order Triomphe de gand presided.

He addressed the meeting, to the following effect. My friends, by your good will I fill the chair at this our annual meeting, an honor I duly appreciate. We are here to learn with what success we have weathered the wintry season, and what are the prospects of yielding a good supply of our delicious fruit the coming summer. I congratulate you my friends, upon the evidences of health and vigor I see around me. The verdure of your leaves and plumpness of your crowns shew sufficiently that you have borne uninjured the trying posts. No former meeting has been so numerous attended—none so promising. I miss however the presence of one, who was with us on several former occasions. Our friend Hooker is not here, and lest his absence may give rise to sinister suggestions, I beg leave to say, that from good authority I have it, that the wintry cold has almost destroyed his vitality. His physicians are of opinion that an instant removal to a more genial clime, is all that can save him. You know how severe the winter's cold is here, and none but strawberries of the strongest constitutions can survive it. We ought my friends indeed to protest against being left in a state of nakedness as we generally are, to rough it as best we may. I would suggest the passing unanimously of a strongly worded resolution against this practice. Why even a thin blanket, in the shape of a light covering of cut straw, or leaves would be to us most acceptable. (Hear, Hear), and it is certain that without it we cannot bring forth a full cup. The best cultivators, who are ready to acknowledge how bountifully we repay any like kindness or attention, do not think of exposing us unclothed to every blast of an hyperborean winter. They could not be so barbarous. But I will not just now occupy your attention.

Mr. Albany Seedling, rose, and said,—Mr. President, before proceeding to the ordinary business of the session, I rise to a point of order. We must have regard to our dignity. And I hold it is unseemly for one of the male sex, to adopt a female cognomen. Jenny Lind is known to be of the harsher sex, yet he calls himself, by a female name. This sort of thing should be put down; it causes confusion in men's minds. As to what you have said about

covering, I agree. My constitution is supremely hardy, people even say, slanderously of course, sour, yet I would not object to a little shelter. I should feel the better for it, and my fruit would be larger.

Madame Hovey, followed, — Mr. Chairman, I was very sorry to hear, the remarks of my much respected friend who has just ceased utterance upon my dear companion Jenny Lind. He is not at all to blame, it is not his fault if he is miscalled, the choice was not his. It is indeed a misfortune that so young, vigorous and handsome a gentleman should be nick named. He is so energetic, hardy, beautiful, productive that I shall like him under any name. Mr. Chairman—I am an old settler, years before your advent to this land—25 years ago I was born here. A long time sir for a strawberry—equal to centuries in other existences. And I have maintained my position in the first rank, being equal to any when properly treated. In size, beauty, excellence, productiveness, and vigor, second to none. The only one indeed on which you can rely for a full market crop. But then sir, I am often grossly abused. Other and inferior kinds are often called by my name. Of course their crop is light, and I am blamed. Again, I am frequently compelled to dwell alone. Now Sir, let men praise as they like a solitary, and hermit like life, it does not suit me. Society is essential to my welfare, I cannot thrive well without it. This is the only disadvantage under which I labor, if indeed it be a disadvantage. No one can hope to combine in himself all good qualities, Providence does not thus distribute its bounties. In the society of others I am cheerful and vigorous, I am no misanthrope. Let Mr. Albany Seedling, or Jenny Lind, or perhaps best of all Boston Pine, grow with me side by side, and I will shew what a good crop of fruit is, and what is so seldom seen. Sir, I am, under good and suitable treatment, immensely prolific. Let what I have now said be remembered.

McAvoy Superior, in evident haste rose, and said, (she had a slight defect in her speech).—Mr. Pres-president, I protest against the self-self laudation of Mistress Ho-Hovey. Why do these old dames put-put on such airs. It is to co-coquette with the gentlemen, (cries of order, amidst a general rustling of leaves). She is old, sue-she looks winkled (fie, fie, oh!) Well, I will say no-no-more on this point. But I pro-test against such a jing-jingling-jumblung of terms as we now-now hear. Instead of plain male and fe female plants, we hear, Stam-Staminates, Her-Hermaph Hermaphrodites, and Pis-Pis Pistileate plants. No wonder simple folks are discouraged. It should be stop-stop-stopped.

Mr. Jenny Lind succeeded.—It is time Mr. Chairman that I spoke for myself. As to my name, none can regret it more than I do, but

the dolt with whom I first saw the light knew no better. Doubtless a little jealousy gave rise to Albany Seedling's remarks. It will be acknowledged on all hands, that I have several very good points. I am very early, rather large, light bright scarlet, beautiful good flavor, and productive. Perhaps the feminine grace and beauty of my neck had something to do with giving me a feminine name. It will be acknowledged too that I am an excellent fertilizer of other plants. Mistress Hovey, and Burr's New Pine, could testify to this. As it would not be modest for one so young to take up the time of this great assemblage, I will say no more.

The President having risen, observed,—It has been suggested to me, that as the hour is so late, it would be better, if instead of each one speaking, I would as fairly as possible, say a few words. I do so with pleasure. You, my friends, are all aware that I am not a native. I was brought from Belgium, but this climate suits me well. As to soil I am not particular, but I am so as to the mode of cultivation. I and nearly all foreign strawberries need a different treatment to that which they require who are native, to the manner born. We require to be cultivated in hills—and few are aware of the reason why. Now the true cause is that we for the most part have an entirely different habit, possessing the capacity of forming an abundance of offshoots or crowns, which swell up, make new roots, and when the runners are checked become as it were a dozen plants in one, every crown throwing up one or more fruit stems. It is different with most of the natives. They do not succeed well under the treatment of the English varieties. If grown in hills, and the runners clipped, the plants do not extend by offshoots readily, the old plant becomes stumpy, and the result is rather a scanty supply of fruit stems. The Hovey's Seedling is of this character. Grown in hills it fails. The plants do not extend by offshoots or form numerous crowns. Yet cultivated in beds it will give a very large crop. The Austin Seedling is like it, so is McAvoy Superior.

Something has been said about fertilization, and this too is all important to some—to the Hovey particularly—and lastly with regard to the soil. This has a material effect. All the English sorts like a heavy, stiff, even clayey loam, on rather a dry subsoil, otherwise they winter badly, while the American kinds will produce best in lighter earths. I shall now close my remarks, and this meeting together, by the introduction of some important strangers:—

The Empress Eugenie. A remarkable strawberry, was awarded the first prize at the Great Show at the Crystal Palace in 1860. Fruit of a deep rich red, sweet and good, of the largest size, often weighing two ounces.

La Constante. A French strawberry. One of the largest, most beautiful and productive varieties yet introduced.

Wonderful. Fruit very large, and irregular form. Flesh, white, firm, sweet, perfumed and delicious. Continues long in bearing.

May, 1863.

PEACH TREES.

TO THE EDITOR.—Will you allow me to call attention to the peach. In many parts of the Province where no attempt is made to produce this delicious fruit it could very well be grown with a little extra care. I have by pinching kept two trees so small, as to be able to cover them with a large barrel, and they have endured the cold without injury. Let it be remembered that it is not the cold, however severe, which destroys the tree, but a warm sun shining on it, while yet frozen. I have had trees bear cold so low as 33 below zero, without injury, on the north-western side of a building.

Yours, C.

May, 1863.

CULTIVATION OF HERBS.

How is it that so little attention is given to these useful, pleasing, fragrant plants by those who labor to have a good garden. That they are generally overlooked we well know. There is no difficulty in their cultivation. The Dill, the Rue, the Lemon Thyme, the Rosemary and others may be grown with little trouble. The wicked King Ahab coveted the vineyard of Naboth that he might have it for a garden of herbs. Without desiring any approach to the unlawfulness of his wish, may we not think that you, reader, would be the better possessing, if not a garden, some little nook or corner of the garden sacred, to these unpretending, but not unprofitable little affairs. If you doubt their utility and beauty, enquire of some old dame, who for years has tested their excellence. She will tell you how good they are for many ordinary ailments, and how necessary to flavor and garnish many a dish for the table. For the nursery and for the kitchen they are alike useful. Some are annual, others biennial and perennial, and the seed is easily had at almost any seedsman's store. Take my advice, reader, and grow them, and you will cease to regard them as unworthy of notice, and mayhap in time learn to esteem them as valuable as many an occupant of the gayest parterre.

C.

May, 1863.

Veterinary Department.

VERTIGO OR GIDDINESS IN SHEEP.

M. Reynal considers vertigo a disease of the nervous system occasioned by a worm—the *ex-naries cerebri*, (located in the brain) belonging to the *hydatid* family.

Lambs, from the age of two months, or from four to twelve months, become the subjects of it; and it rarely effects them after the age of eighteen months. The disease is apt to end in *atrophy*—wasting of the brain and spinal marrow.

In the rank of principal causes he places, first—“Hereditariness.” Secondly—“Intercourse between the sexes too prematurely, especially the employment of a ram for *tupping*, not more than six or eight months old as is the practice in some parts of the country.”

To Guard against the Disease.—“Put out of the breeding fold both males and females that have shown any signs of the disorder, and not breed from the ewes under the age of thirty months, nor from rams until they have attained their second year.”

And if there be any binding conclusions to be drawn from the influence of a first foundation or necessary ones, we ought to put away from the flock females who, though in apparent health themselves, have once produced diseased stock. *Translations from the French, by W. Percival.*

LINSEED-TEA FOR SICK HORSES.

Linseed-tea is not only a valuable *restorative* for sick horses, but it is exceedingly useful in cases of inflammation of the membranes peculiar to the organs of respiration and digestion; it shields and lubricates the same; tranquilizes the irritable state of the parts, and favors healthy action. We have prescribed linseed-tea in large quantities during the past month, for horses labouring under the prevailing influenza, they seemed to derive much benefit from it, and generally drank it with avidity. Aside from the benefit we derived from the action of mucilage and oil, which the seed contains, its nutritive elements are of some account, especially when given to animals laboring under soreness in the organs of deglutition, which incapacitates them from swallowing more solid food. In the event of an animal becoming prostrated by inability to masticate or swallow more food, linseed-tea may be resorted to, and in cases of irritable cough, the addition of a little honey, makes it still more useful. In the latter form, it may be given to animals laboring under acute or chronic disease of the urinary apparatus, more especially of the kidneys.

To Prepare Linseed-Tea.—Put a couple of handfuls of the seed into a bucket, and pour a gallon and a half of boiling water upon it.

Cover it up a short time, then add a couple of quarts of cold water, when it will be fit for use. —*Prairie Farmer.*

Miscellaneous.

NATURAL HISTORY IN HOME EDUCATION.

(From the Museum.)

But an intelligent parent might admit all these inferences, and might yet fairly ask, “Supposing that my child liked these studies, what good would they do him?” In other words, what are the results they might be expected to produce?

The first and most obvious is, that the bodily organs, by means of which we take cognizance of eternal objects, are trained to habits of activity, promptitude, and correctness. It is to these Mr. Wyse refers in his work on education reform, where he urges that they should, “as early as possible, be prepared for use. If not, when wanted, they will be found rusty or blunt. The education of the senses neglected, all after education partakes of a drowsiness, a haziness, an insufficiency which it is impossible to cure. Educated well, they give to all knowledge and virtue a positiveness, a firmness, a vivid freshness, such as makes the difference between waking and a dream.”

The second effect is the training of the perceptive faculties, by the aid of which we are enabled to compare, examine, and discriminate. The mental powers, no less than the muscles of the body, require to be exercised, otherwise they become feeble and languid; habituated to activity, they are at all times vigorous and fit for service. The faculty which natural history pursues bring into play, are not those which are called into action in the old routine of school education. It is the more desirable, therefore, that they should be systematically exercised, and brought into full and healthy action. If this be not done, if any portion of the mental constitution be allowed, through inaction, to lapse into feebleness, the whole mind is injured, the healthy action of all its powers is precluded.

From the combined action of the bodily senses and the mental faculties, comes the acquisition of knowledge. In the case of children, the amount of such knowledge is small, but it is good so far as it goes, and it prepares the way for better. It does not consist of hard names but of facts connected with the history, powers, properties, uses, or peculiarities of the plant or animal. Such knowledge is imbibed with pleasure and restrained with ease. Thus, for example, if children be taken in the month of June to some woody spot, when the woodroose or woodruffe, is in blossom, make them observe its snowy petals, and its whorl of bright green leaves, tell them the old rhyme which embodies

the antiquated manner of spelling the name, and gather a few of the blossoms, that they may, after becoming withered, emit their delightful fragrance. Let this be done, and three children out of four will remember the flower, call to mind its perfume and, on the next opportunity, will seek to cull it, and to bring it home.

If we, in our intercourse with children, be content to communicate knowledge on one subject only at one time, and to make that clear, distinct, and intelligible, much will be gradually and insensibly acquired, and each little walk will become the medium of instruction, imparted without labour, and imbibed without irksomeness. Of the good effects of such rambles, I may venture to speak from my own experience. My children at times asked permission to bring with them some of their little playfellows; and thus it has often happened, that a very useful assemblage of interrogators bore me company on the sea shore, or in the little glens of a country excursion. Their questions I was often unable to answer, but, still, enough was imparted to make all desirous of another ramble, with the sharp look-out for specimens, the merry talk, and ever-varying incidents.

But the good effects of such teaching are not to be measured by the knowledge of actual facts so acquired. When once an interest is excited about the structure or habits of any animal or plant, the imagination is roused, and the child regards it with thoughts that are essentially poetic, though they may never find utterance in words. Thus if the lapwing assume the movements of a wounded bird, to draw the intruder away from her nest; if the young ant cast off her transparent wings before entering on her domestic duties; if fragile gelatinous creatures light up the depths of ocean with phosphoric splendour, the mind does not rest on the simple fact, but traces out a thousand fanciful analogies. The bright things of earth, and the rich creations of fancy, are associated, and under their refining and elevating influence, the world can never appear "a pestilent congregation of vapours." In order to show that I do not over-estimate the value of this kind of teaching, I may quote the opinion of Mr. Wyse: "All that can still nourish the heart in the midst of this barrenness: which can still keep the fresh fountains of youth in our withering existence: which can bring even a portion of its life into our life; and not permit the world, worldly as it is, to be wholly desecrated to our sense; whatever can do this is a great and good gift to any human being, and at no time, and in few countries, greater or better than in our own.

The course of instruction here advocated should not only excite the imagination, it should penetrate the heart. The pleasure with which we contemplate the animal and vegetable world prompts us not wantonly to destroy or to injure that which we admire. A child tends and feeds a caterpillar, watches with amazement its transformations, and naturally feels reluctant to de-

stroy a creature so wonderful. The same feeling is at work with regard to other tribes, and thus practically enforces the duty of—humanity to animals.

From habitually beholding the wonders of animal and vegetable life, from having them associated with pure and glowing thoughts, and with feelings of humanity towards all the inferior creatures, the mind is easily led to contemplate them with reference to their Divine Original. "The lilies of the field" become in this way vested with new beauties, and even a child can understand how true it is "that Solomon in all his glory was not arrayed like one of these." While he lisps the simple prayer, "Give us this day our daily bread," it is not difficult to make the child comprehend that the same beneficent Being he addresses provides, by His good providence, the food of every creature that has life. The child thus instructed can enter in some degree into the spirit of the passage, "Behold the fowls of the air, for they sow not, neither do they reap, nor gather into barns; yet your heavenly Father feedeth them."—Article: *Natural History in Home Education.*

THE TALLOW TREE IN CHINA.—The tallow tree, called by the Chinese, *Oo Ricon*, is of the height and appearance of a pear tree, with twisted branches and a large round head. The trunk is short and thick, and the bark smooth. The leaves are alternate and resemble those of the black poplar. The blossom is yellow; but the most singular part of the tree is the fruit, which is enclosed in a husk like that of a chestnut. As the fruit opens the husk opens of itself, showing three white grains about the bigness of a filbert. These grains contain the beautiful vegetable tallow so useful to the Chinese. The fruit of the tallow tree goes through nearly the same process as the seed of the oil-plant.

The machine by which it is bruised consists of a wheel moved backward and forward in the trunk of a tree, which is shaped like a canoe lined with iron, and fixed in the ground. The axis of the wheel is attached to a long pole which is laden with a heavy weight and suspended from a horizontal beam. The berries thus bruised and divided are exposed for a considerable time to the action of steam, until they become very soft, when they are quickly thrown into layers of straw, covered up again with other layers of straw, and spread about as equally as possible. Men do this with their feet; and as the berries are very hot, and, of course, warily trodden upon, the operation bears a striking resemblance to dancing. The appearance of a number of men gravely and carefully evolutions on their toes, has been described as irresistibly ludicrous—particularly as it is unaccompanied by music; by this process large cakes are formed of the mingled grains and straw. The cakes thus formed are afterwards pressed.

The tallow is hard and white, and has all the properties of that obtained from animals. Three pounds of vegetable oil are mixed with every ten pounds of the tallow, and a quantity of wax is used to give it consistence.

The best candles are also coated with wax. If properly prepared they burn almost without any smoke or disagreeable smell. It often happens that candles prepared with vegetable tallow burn with a great flame, throw out much smoke, and consume quickly; but this is attributed to a slovenly and dirty mode of preparation and to the nature of the wick, which is usually made of dry and light wood—not much unlike the wick of a rushlight. Candles made of this tallow by Europeans have been found very nearly equal to those made of wax.

The tallow tree is usually planted in extensive plains and in regular order, the leaves being either of a deep purple or a brilliant red, and the blossoms of a bright yellow; the contrast is said to have a very pleasing effect; and European travelers have described the groves of those trees as the most beautiful objects of a Chinese landscape. This tree has now been successfully acclimatized in Algeria—it requires no care or watering.—*Scientific American.*

A DIMINUTIVE BREED OF CATTLE.—In the report of the Secretary of the Massachusetts State Board of Agriculture for 1862, Mr. Flint gives the following description of the cows of Brittany, a province in the north of France, as observed by him at the International Exhibition in London last summer.

"The little Bretaine cows pleased me exceedingly. Standing only about three feet high on their legs—the most fashionable height, most black and white, now and then, but rarely, a red and white; they are as docile as kittens, and look pretty enough to become the kitchen pet of the hard pressed mountain or hillside farmer, with pastures too short for a grosser animal. Ten pounds of hay will suffice for their limited wants for twenty-four hours, and they would evidently fill a seven quart pail as quick as long as any other cow."

"These pretty cows will often hold out in milk, so the herdsmen said, from fifteen to eighteen months after calving, and often begin after the first calf with six or seven quarts a day. The horn is fine, not unlike the Jerseys, but smaller and tapering off gradually, and the escutcheon or milk marks of Guenon generally very good. Good cows are held from sixty to seventy dollars ahead, a fancy price of course, but I am not sure that they would not pay six per cent, on the investment as well as most "fancy stocks."

Mr. McGruer, of Lancaster, C. W., sent a pair of oars to the International Exhibition at Kensington, and as one direct result of doing so he has received an order for 2,000 pairs of oars, to be shipped on the opening of navigation.

GROWTH OF TIMBER?—It is a singular fact that what were vast treeless prairies in Illinois, twelve years ago, are now covered with a dense growth of thrifty young forest trees, comprising various species of oak, hickory, cottonwood, ash, &c.; so rapid has been this change in many localities, that where some of the early settlers located, twenty to twenty-five years ago, without a tree around them, they can now cut and hew good building timber a foot square. Prairie land, when kept from the annual fall burning formerly practiced by the Indians, rapidly produces a growth of trees. Some of the old citizens, who greedily located the timber land when they came to this country, and were careless about acquiring prairie, now find the latter of more value than the former; their timber has grown faster than they used it.

WHAT BECOMES OF THE SILVER?—It has long been known that vast quantities of silver have for centuries been carried to India, and that there it disappeared out of the circulation of the world like pebbles down a cavern. It is said that in the last twenty five years \$550,000,000 have been sent thither, of which \$450,000,000 have thus disappeared. No probable reason has ever been discovered for this mystery, except the ancient Asiatic custom of burying specie and jewelry in the ground.

EFFECTS OF EATING BETWEEN MEALS.—Among the many slight causes of impaired digestion is to be reckoned the very general disregard of eating between meals. The powerful digestion of the growing boy makes light of all such irregularities; but to see adults, and often those by no means in robust health, eating muffins, buttered toast, or bread and butter, a couple of hours after a heavy dinner, is a distressing spectacle to the physiologist. It takes at least four hours to digest a dinner; during that period the stomach should be allowed repose. A little tea or any other liquid is beneficial rather than otherwise, but solid food is a mere encumbrance. There is no gastric juice ready to digest it; and if any reader, having at all a delicate digestion, will attend to his sensations after eating muffins or toast at tea, unless his dinner has had time to digest, he will need no sentences of explanation to convince him of the serious error prevalent in English families of making tea a light meal, quickly succeeding a substantial dinner. Regularity in the hours of eating is far from necessary; but regularity of intervals is of primary importance. It matters little at what hour you lunch or dine, provided you allow the proper intervals to elapse between breakfast and luncheon and between luncheon and dinner. What are those intervals? This is a question each must settle for himself. Much depends on the amount eaten at each meal, much also on the rapidity with which each person digests. Less than four hours should never be allowed after a heavy meal of meat. Five

hours is about the average for men in active work: But those who dine late—at six or seven,—should never take food again until breakfast next day, unless they have been at the theatre, or dancing, or exerting themselves in Parliament in which case a light supper is requisite.—*Lew is's Physiology of Common Life.*

Editorial Notices, &c.

SUPER-PHOSPHATE OF LIME.

We learn that Messrs Flening & Co., seedsmen of this City, have been appointed Agents for Coe's SUPER-PHOSPHATE OF LIME, manufactured in Montreal. The testimonials of parties who have used this article, are numerous and satisfactory. Super-Phosphate of lime has of late years been very extensively employed as a manure, both for farm and garden crops. Price \$50 per ton, or in single barrels at the same rate.

CORRECTION—BUTTER MAKING.—In the article in our number of April last, on the Canadian Butter Trade, communicated by a correspondent from Leith, Scotland, we find that a typographical error occurred in regard to the quantity of sugar and nitre to be used in Butter curing, which error we now desire to correct.

The proper quantity of salt &c., &c., for every 100 lbs. of fresh butter is as follows: $3\frac{1}{2}$ lbs to 4 lbs of fine grained salt, 6 ounces of fine pounded sugar and 2 oz nitre (well pounded.) These should be minutely mixed together before curing.

THE BRITISH AMERICAN: *a monthly Magazine, devoted to Literature, Science and Art, No. 1. Toronto: Rolto & Adam. May 1863.*

We have here the first number of a purely Canadian Magazine, which will, judging from the literary execution of its varied articles, not fail, we trust, to gain a respectable standing among similar productions not only on this continent but also in the mother country. Professor Hind is the general editor, and the present number contains two very interesting papers from his able pen; North West British America, and sketches of Indian life, comprising salmon-spearing in Labrador, by torchlight. Among the articles which will be read with more than ordinary interest by Canadians may be mentioned the following: My Cousin Tom; A Sketch from Life, by Mrs. Moodie; Early

Notices of Toronto, by Rev. Dr. Scadding; Holiday Musings of a Worker, by M.s. Holliwell; Flowers, and their Moral Teachings, by the authoress of the "Backwoods of Canada;" Insect Life in Canada, by Rev. Charles S. Bethune, M. A.—with two elaborate articles, The Bank of Credit Foncier; and the Post Office and the Railway.

The "getting up" of this number, consisting of 112 clearly printed pages, is exceedingly creditable, and we trust that the enterprise will receive an amount of public support that will remunerate the proprietor for his necessarily heavy outlay, and ensure the continuance of the work, which, if carried on as it is begun, will reflect honor on Canada. All who feel interested in sustaining and diffusing the spirit of British institutions, and a native literature in these western parts of the Empire, should aid this truly laudable undertaking by at once becoming subscribers. Terms, \$3 per annum, with a liberal discount to the trade.

EDINBURGH REVIEW, April, 1863.

BLACKWOOD'S MAGAZINE, April 1863: *Leonard Scott & Co., New York.*

We have received, through Mr. Rowsell, of this city, the above reprints of these old celebrated British periodicals, which, with the Quarterly, Westminster and North British, the Messrs. Scott bring out with great regularity and dispatch; and at a price which places these invaluable serials within the reach of all on this side the Atlantic who feel interested in the progress of literature, science, and the politics and civilization of the world. The *Edinburgh* contains nine articles, more or less elaborated. Kinglake's Invasion of the Crimea; The Black Country, (British Coal Fields); India under Canning; The Bible and the Church; Prof. Huxley on Man's place in Nature; and the Greek Revolution, will be found exceedingly interesting to general readers. *Blackwood* continues to maintain his undoubted literary ascendancy, and the articles of the current number are of the same high order as usually characterize this long established and world-renowned Magazine.

THE HORTICULTURIST: *Mead & Woodward, 37 Park Row, New York.*

The May number of this old established periodical is, as usual, replete with interesting

and useful articles on subjects relating to Horticulture, and Rural Art and taste. No Horticulturist, professional or amateur, can afford to do without it. Price, \$2 per annum.

THE GARDENER'S MONTHLY: *W. G. P. Brinckle, Philadelphia, and C. M. Saxton, New York.*

This excellent serial continues to pursue the even tenor of its way. The May number contains a variety of papers on subjects of seasonal interest to all lovers of a garden. It has several good illustrations. It is refreshing to see works of this character so well sustained in the adjoining republic in the midst of appalling national troubles, which, thank God, cannot obliterate the love of the pure and the beautiful from the human heart. Price, \$1 50 a year.

TORONTO MARKET PRICES.

TORONTO, MAY 23, 1863.

Fall Wheat, per bushel.....	\$0 85 to \$0 95
Spring Wheat, " " " " " "	80 " 87
Barley, " " " " " "	60 " 70
Peas, " " " " " "	55 " 60
Beans, " " " " " "	45 " 50
Oats, " " " " " "	56 " 60
Rye, " " " " " "	50 " 60
Wheat, per 100 lbs., " " " " " "	5 00 " 6 00
Barley, " " " " " "	4 00 " 5 00
Oats, " " " " " "	4 00 " 4 50
Potatoes, per bushel, " " " " " "	50 " 65
Apples, per barrel, " " " " " "	1 50 " 1 00
Turnips, per bushel, " " " " " "	16 " "
Fresh Butter, per lb., " " " " " "	15 " 20
Butter, " " " " " "	12 1/2 " 15
Eggs, per doz. " " " " " "	7 " 10
Hickens, " " " " " "	40 " 60
Lard, per ton, " " " " " "	18 00 " 23 00
Flour, " " " " " "	10 00 " 15 00
Wheat, per 100 lbs., " " " " " "	4 50 " 5 00
Wool-skins, per lb., " " " " " "	8 " 9
Wool-skins, each " " " " " "	1 50 " 2 00
Wool, per lb., " " " " " "	30 " 32
Over Seed, per bushel, " " " " " "	3 75 " 4 00
Moist Seed " " " " " "	2 00 " 2 50
Master of Paris, per barrel " " " " " "	95 " 1 00

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April, 1863.

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Markham.

April, 1863.

11.

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Toronto, December, 1862.

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3-

THE
Canadian Agriculturist
 AND
 JOURNAL OF THE BOARD OF AGRICULTURE
 OF UPPER CANADA.

VOL. XV.

TORONTO, JULY, 1863.

No. 7.

AGRICULTURAL MUSEUM.

We again request the attention of our readers and all others interested in the promotion of agriculture in this Province to the proposed Agricultural Museum, for the accommodation of which the Board has set apart a very extensive and suitable room in their new Hall, on the corner of Yonge and Queen Streets, in this city. Some progress has already been made in procuring specimens of grain, &c., chiefly from abroad, with a few implements and machines.—As it is most desirable that arrangements should be commenced in earnest this summer, for carrying into practical effect this interesting and important object, the earnest attention of our farming and mechanical friends is herein called to the following explanatory observations.

What is sought to be obtained by the establishment of a museum, which the statute appointing the Board lays down as one of its principal objects, is the collecting and arranging in a suitable building, the characteristic productions of Canadian agriculture, including farm implements and machines, dairy utensils, and in fact whatever relates to, or illustrates our rural life in this country. Specimens of foreign growth or manufacture, whether from Great Britain and our sister Colonies in all parts of the world, the United States, or the continent of Europe, will be procured as opportunity may offer; and the Board will always feel happy to make exchanges as far as practicable either with individuals or Societies in all countries. Cana-

dian productions, however, are those which are primarily desired, and with this view we make a direct appeal for co-operation and aid to Societies and enterprising individuals, who share a common feeling in promoting the important interests of our native agricultural and mechanical industry. It is desirable also to bear in mind in connection with this object, that the beautiful and truly valuable sister art of *Horticulture*, in all its branches, is associated.

It must be obvious upon a little reflection that in order to collect materials for a museum which will represent the state and result of the rural industry of Canada, in particular, and of our sister Colonies in British North America, in general, very much will depend upon the disposition of farmers, mechanics, and the lovers of gardening, however widely cast asunder, to aid the enterprise by forwarding suitable and characteristic specimens. With such aid, under proper and efficient management, a collection would in a few years be formed that would be highly useful and instructive, and would give the visitor, whether a stranger or otherwise, a much clearer idea of the industrial condition and capabilities of this magnificent portion of Her Majesty's dominions, than could possibly be otherwise obtained, except by extensive travel and careful observation.

As the season for maturing the productions of the earth is at hand, the co-operation of all such as can aid this object is respectfully and earnestly solicited. The cultivated cereals, both in the grain and straw, good characteristic

specimens carefully pulled up with the roots will be always acceptable. Also wild or cultivated grasses, uncommon weeds taken when in flower, slowly dried in the shade or folded between sheets of soft paper. New varieties, or extraordinary vegetable productions are also requested, whether of the field or the garden. Fruits, nuts, &c., will also be acceptable. Insects not generally well-known, injuriously affecting the cultivated crops, fruits or forest trees are solicited. Specimens of remarkable soils with the underlying rocks, and in short, any natural or cultivated production illustrative of the climate and productive power of the country, will be welcome. We may also mention the fur of wild animals, the wool of different breeds of sheep, stuffed specimens of remarkable domestic poultry, eggs, &c. Each specimen should be correctly named, where, and by whom produced, with a statement of the particular facts of interest connected with it.

Manufacturers of Agricultural Implements, tools, &c., are requested to send specimens, or in case of the larger machines, models, of what they consider not ordinary productions. The price of each article, and a statement of what are estimated its particular advantages, should accompany it. These productions will be kept on exhibition free of expense to the makers, and in this way it is believed a benefit will be conferred upon them. In case of farm or garden productions, sent by express, the Board will be at the expense of transit, addressed to H. C. Thomson, Secretary of the Board of Agriculture, who will be happy to furnish any additional information relative to this object that may be desired.

EARLY AND LATE SOWING OF WINTER WHEAT.

The following letter, published in the *Country Gentleman*, from John Johnston, of Geneva, N. Y., widely known as the "Great Tile Drainer," will be found highly interesting to farmers, and from the reputation and long experience of the writer is deserving of attentive consideration. We should not go so far as to endorse Mr. Johnston's views in all respects, including exact dates, as applicable to this country. Some allowance must be made for climate, soil, seasons, &c., but the general principle is worth noticing that it may be possible to sow too early; and

where the Hessian fly is prevalent there can be little doubt that very early sown wheat suffers the most from its attacks. On the other hand forwardness in spring and early maturity is one of the great safeguards against the attacks of the wheat *Midge*. The problem then is, to sow late enough to avoid the fall attacks of the Hessian fly, and yet early enough to get the plant well rooted before winter, and thus secure as far as possible forwardness and early ripening the following season, as a protection against the *Midge*. By a thorough tillage of the land, adequate drainage, and sowing early ripening varieties of seed, this result may in average seasons to a great extent be attained. For Upper Canada generally the period of sowing we should recommend is from the 10th to 20th September, or even as late as the 25th in some localities, where the soil and situation are specially favorable to early maturity. And it happens that within these dates is about the period of sowing found most conducive to the vigorous and healthy growth of the wheat plant, independently of considerations connected with the depredations of insects.

It is true that many farmers have been in the habit of beginning and ending their sowing between about the 27th August and the 10th September, and as a general rule with not unfavorable results. But in this case, if the land is in condition to promote immediate growth of the seed, and a warm autumn ensues, there is danger of the plant attaining too great a luxuriance before winter, and it is besides exposed to the attacks of the fall brood of the Hessian fly, where that insect exists. When wheat is sown as late as the 20th September, and afterwards, it is important that the land should be in a condition favorable to quick and uniform germination of the seed, and that an early ripening variety of seed should be selected. On the whole, it is doubtless safer to sow a little too early than too late.

MESSRS. EDITORS:—I notice there is much poor wheat around here. True, there are some fields that are good, but I fear there are more bad. I wrote you last autumn that I thought mine was ruined by the so-called Hessian fly; it is a total failure, and all owing to too early sowing. I sowed the 5th and 6th of September, and many sowed earlier. I knew better than to sow so early, as I had had failures before from early sowing. For a few years after I came here, I began sowing when my neighbors did,

but as I then did the plowing and sowing myself I was often late in finishing, and I saw the wheat I sowed from the 18th till 25th of September was almost always the best crop. In 1831 I had quite a loss by this same fly, and determined to get all my land ready and not commence sowing until the 20th September, or thereabout. I continued that course for about 20 years, and had almost no failures, with the exception of 1844. In September of 1843, as I intended going to the State Agricultural Show at Rochester, I sowed early, in order to sow my wheat before I went, and in consequence lost at least half my crop of 80 acres. Some time after the midge commenced to destroy the wheat crops along here, people got almost crazy to have their wheat early sown—some, indeed many, sowing in August, but I never began earlier than the 11th or 12th of September, and had no failure.

I have proof positive that if I had sown about the 20th of last September, I would have had fine looking wheat now. By some imperfection in the drill it missed dropping from one spot the whole length of the field for several times; these rows I had drilled over about the 20th or a little later. Now these rows are as healthy looking wheat as any man can wish to see, while the other is worthless. If farmers will take heed to what I have waited, it will do more good than the loss of 13 acres of wheat will harm me, although I fully expected 500 bushels when I sowed it. It is folly sowing so early. I never knew one day difference in coming in ear, or of ripening, from that sowed on the 12th or 25th of September, if the condition of the land was equal, and I have no doubt if farmers generally will make notes of their sowing and the ripening of different fields, they will find what I say is correct.

We now have very fine weather. My barley looks very well, grass very good, clover ditto. I have not been from home to see the wheat, but my friends tell me much is bad. Mr. Foster, who has as good land for wheat as any in this country, says his is an entire failure. I presume he sowed early, as he keeps up his work generally.

I should add that those who sow the end of September and in October, should sow more seed to the acre than those sowing earlier.

JOHN JOHNSTON.

Near Geneva, May 14, 1863.

EDITORIAL NOTES.

Visit to the County of Wellington, Mr. Stone's Stock, the Crops, &c.

Having spent a few days in the County of Wellington, it may not be uninteresting to our readers generally to bring under their notice, in a concise way, some of the more prominent matters that we observed in connection with the state and progress of Agriculture,

The ride from Toronto to Guelph on the Grand Trunk is in many respects an interesting one, embracing a section of country considerably diversified, and possessing on the whole great agricultural capability. After leaving the sand drift which forms a surface of some extent to the west of Toronto, comprising soils generally weak and of unequal degrees of productiveness, the traveller passes over the strong, and—where properly cultivated—highly productive lands of West York and Peel. The soil over extensive and comparatively level tracts is a calcareous clay, more or less retentive, admirably adapted for raising the finer qualities of wheat clover, and indeed, the usual farm crops, which almost every where had a very promising appearance. Upon these strong, rich lands, especially when the surface is wet, arising from flatness, the advantages of draining, especially deep underdraining, are most obvious even to the travelling observer. Instances were pointed out to us while in the train, which clearly indicated the vast difference between the appearance of crops on drained and undrained land, all other conditions being equal.

We had the pleasure and advantage of spending a day with Mr. F. W. Stone of Guelph, a gentleman so well known and respected both in Canada and the United States to need any eulogium from us. As an importer and breeder of farm animals of every description, except the Horse, Mr. Stone has for several years occupied a first position on this Continent, and a quiet day with such a man increases one's knowledge as well as pleasure. We had time to go over his home farm only, and regretted our inability to see his other farm, some four miles distant, where his celebrated flock of Leicesters is chiefly to be seen. The home farm consists of about 50 acres, most pleasantly situated within a mile of the flourishing town of Guelph. The farm buildings are new, quite extensive and apparently arranged in a convenient manner to meet the varied requirements of horn cattle of various ages, sheep, pigs, &c., as to ventilation, warmth, cleanliness, &c. One cannot help feeling in surveying this extensive suite of buildings, which are finished in a very substantial manner, that the enterprising owner has been guided by an enlightened desire to profit, rather than a prodigal expenditure. While Mr. Stone is to be regarded as a enterprising farmer, in the highest and

best sense of the term, he must also be considered essentially practical, and no young farmer, in particular, of ordinary powers of observation, can visit his establishment, without carrying away with him much that will be of practical value and application in the great business of life. It is this keeping of expenditure within what may be termed practical and profitable limits, that most deeply impressed our mind in taking a general and afterwards a more detailed view of the arrangements and operations of this farm. We observed that a considerable portion of the cattle, especially the bulls, both Durhams and Herefords, are kept in the byres and yards during the summer and fed on green food, thereby making a large amount of valuable manner, and keeping the animals cool and quiet. It is Mr. Stone's intention, however, to allow more of his animals to roam abroad, within certain limits, as soon as the fields and fences will admit. Few but such as have had practical experience can understand the time and expenditure, as also judgment and perseverance required in bringing up an imperfectly cleared Canadian farm to the degree of finish and productiveness as that which characterises the one to which we are now referring. Mr. Stone adopts the progressive plan,—which is the safest and most profitable,—of bringing his ground into a complete state of cultivation; allowing time for the operations or agencies of nature to produce their ameliorating effects. Many acres of low lying swamp have already been partially drained by cutting deep and wide ditches as channels for the drainage, thereby preparing them for profitable pasturage; leaving more detailed operations to a subsequent opportunity. Mr. Stone is of opinion that the Italian and Pacey rye-grass may be advantageously substituted for Timothy with clover; they mature with the latter more evenly. We observed heavy crops of this mixture, promising three tons to the acre. Cocksfoot has also been introduced, producing a very heavy weight.

Of Mr. Stone's stock it is unnecessary to speak in detail, its quality is well known and appreciated far and near, but the quantity we found greater than we expected. His Durhams and Herefords have been selected with much care and judgment from the best herds in England, and imported at great expense; while those of his own breeding will sustain, on the whole, the superior character of their parentage.

We particularly admired some beautiful Herefords which we saw as prize animals at the Royal English Society's show at Canterbury in 1860. It is not till within the last three or four years that we have had in Canada any worthy representative of this excellent breed, which deserves to be better known both here and in the States. To make invidious comparisons between Shorthorns and Herefords, as some are wont to do, is alike discreditable to good taste and correct judgment. While Mr. Stone duly appreciates the latter, we find by the large number of fine animals which he has of the former, that they continue to hold the same high place in his estimation. In the flock of Cotswolds we observed many very superior animals, derived from the best blood from their native hills in Gloucestershire; and of Southdowns we noticed some perfect beauties, of the late Jonas Webb's world renowned stock. It is but bare justice to remark that although Mr. Stone has most of the modern appliances for preparing food for live stock, such as chaff and root cutters, pulpers, &c., he eschews the *pampering* system, and prefers keeping his animals in a good thriving condition. In deed several of the sheep were hardly up to this point during the late spring months, in consequence of the great scarcity of hay and other produce, but we observed that they were fast picking up in pasture. Mr. Stone continues to devote attention to the improved breeds of swine, of which we noticed some fine specimens; nor does he consider the poultry yard beneath his notice, having imported the most approved varieties of modern breeds. In this department he regards his operations as not proving particularly fortunate. He is attempting to naturalize the English pheasant, with what success remains to be seen.

The depression of business in general which for the last few years we have experienced in Canada, coupled with the lamentable occurrences which have taken place in the neighboring Republic, must necessarily affect injuriously enterprises of this nature. Mr. Stone has now on hand a number of animals that otherwise would have been profitably disposed of; the choice being large, parties can readily accommodate themselves, *quality* being duly considered, on moderate terms.

We spent a very agreeable day or two in calling on several farmers in the townships of Guelph and Eramosa, and regretted our inability, for want of time, to inspect the famed Leicester sheep of Mr. Parkinson. We have long known Mr. Hogge as a successful breeder of shorthorns, but hardly expected to find in his herd so great a number of really fine animals. Mr. H. Tolton has a bull that is doing good service, and the general character of the stock throughout the greater part of this country, comprising sheep and pigs, as well as horses and cattle, is of a much improved character. It was in Guelph that the first importation into Upper Canada of any importance took place of pure Shorthorns, under Mr. Wingfield, and the rapid increase that has of late years been given to root culture

throughout this section may be regarded both as a cause and a result of the continuous improvement of live stock. Every farm appears to have more or less of turnips, mangels, carrots, &c. We observed whole fields, from five to a dozen acres, with a smooth, level surface, and without a stump, some with turnips in as good a style of workmanship as can anywhere be met with in the old country. The usual practice seems to be to make drills with the plough, cover the manure, principally farm yard dung, superphosphate, or ground bones, by the same implement, and drill on the ridge, after the manner of the Northumberland system, so prevalent in most parts of England and Scotland. It was truly pleasing to observe wherever we went the original farm buildings, often constructed of l gs, giving way to more extensive and durable structures, thereby clearly indicating a state of social progress and prosperity. This being a limestone district most of the new houses are built of stone, which is also the case with many of the barns and other farm buildings. We must not omit to notice that in calling on Mr. Parsons we had an opportunity of observing the dairy operations by which Mrs. Parsons manufactures the Stilton cheese, which has now for a number of years been so deservedly esteemed for its superior quality. This business requires the exercise of skill and judgment, and involves no small amount of care and trouble, which few, perhaps, would be willing to undergo. Mr Parsons' cows are mostly grades, well adapted for his purpose, several of them being two-thirds Durham. It is an important fact to bear in mind that wherever a number, however small, of pure bred cattle find a local habitation, the general character of the stock of the district gradually improves, yielding in a few years grades of superior quality, whether for the dairy or the shambles.

Wherever we went the country presented a beautiful appearance, and the crops universal y promising, which it is pleasing to be assured is generally the case throughout the Province. The late rains have been of incalculable benefit, and as yet few, if any, symptoms of disease, (except here and there complaints of the grub or cutworm,) among the cereals. With settled weather and an increased temperature, of which there are now signs (June 25th), there is good reason to anticipate a more bountiful harvest than has fallen to our lot for many years.

We would suggest to our readers the importance of not delaying the commencement of haymaking and harvest operations; an error commonly committed. Grass of all kinds should be cut when in full flower, and grain as soon as it is fairly out of the milky state, and the straw has a yellowish hue. In that stage of ripeness plants possess the largest amount of nutritious ingredients: but by allowing them to go beyond that point before being cut, or in other words, to become what is termed dead ripe, a large amount of the starch and sugar which they contain is converted into woody fibre, an almost totally innutritious substance. Besides, a few days gained in the commencement

of haying or harvest in a forcing climate like ours, where the season is brief and work must be hurried, present practical advantages which every reflecting farmer will be able to understand.

THE GRUB.

EDITORS OF THE AGRICULTURIST,—GENTLEMEN: Could you or any of your enlightened readers, through your widely circulated journal, give a remedy, or advise a scheme, to obstruct the ravages of the grub on our white crops. It is much to be regretted some remedy is not put forth for the destruction of this annual pest of the farm, for every one that is at all acquainted with rural affairs will agree that there is not a more formidable enemy to the agriculturist. Last year it was very destructive in this neighbourhood, whole fields of wheat and barley were hardly worth reaping. I see it has commenced its campaign this year again on the barley. In going into a field you see patches cropped off just as though it had been done by sheep. Now could there not be a remedy got in the shape of top dressing to annihilate or even palliate the ruinous evil?

What say you scientific men, initiated in chemistry, physiology and natural history?

Yours, &c., I. S. T.

Whitby, 10th June, 1863.

[Our correspondent does not state exactly what kind of grub he means. We presume it is what is commonly known as the Cut-worm, of which there are several varieties, all, however, resembling each other more or less in habits. We were not aware that any insect of this species was so destructive in the part of the country from which our correspondent writes. There has unfortunately been as yet no wholesale method discovered of getting rid of them. There is only one sure and reliable mode, namely, digging them out of their burrows, which may easily be detected in the morning by the freshly moved earth, and destroying them. But this plan, although it may be adopted successfully in a garden or small piece of corn, is hardly practicable in a large field. Some writers have suggested that they might be caught by puncturing the ground where they are committing depredations with holes with a sharp pointed stick. The grubs fall into the holes and cannot climb up the smooth sides, but lose their foothold and fall to the bottom, and may thus be captured and destroyed. It has also been suggested that as the cut-worms are great travellers, and ramble from field to field in the night, they might be kept out of ground where they have not al-

ready appeared by ploughing a single deep furrow around it, up the perpendicular side of which the grub could not climb. This plan was stated to have been adopted with some success in some localities on the invasion of the Army-worm in 1861, the furrows in some instances being almost filled with the arrested worms, which were destroyed by dragging a heavy log of timber, or some equally efficacious implement over them.—Eds.]

IS IN-AND-IN BREEDING ADMISSABLE.

Its advocates point with triumph, to the example of Robert Bakewell with his Longhorns, and Col. Samuel Jaques with his Creampots; but it should be remembered that every man is not a Bakewell or a Jaques; to prove which it is only necessary to state a well known fact, viz: that after the death of Bakewell, the Dishley Longhorns rapidly degenerated, and have now become extinct; and, since the death of Col. Jaques, the Creampots are going the same way. No man has as yet, been found skilful enough to keep them up to the high standard the attained under the management of their illustrious originators. Chas. Colling tried it with the Shorthorns, and the fact that Comet (155), the best bull of his day, was deeply in-and-in bred, would seem to be sufficient evidence that in-and-in breeding was not only admissible, but highly advantageous. But Comet had a deformed shoulder, and he never sired so good an animal as he himself was. Colling bred from Favorite to the sixth generation. But Favorite is represented as a bull of great size and substance, and rather coarse. For this reason, it was desirable to give his stock more fineness of form than he himself had, and in-and-in breeding would have this effect. His great substance and stamina would admit of it, while at the same time the produce of an animal, with less substance and vigor, would have been utterly ruined. The Rev. Henry Berry tried it with good success, for a while, but many of his animals became entirely impotent, and he was obliged to throw in a strong cross to remedy the evil. Mr. Thomas Bates bred his Duchess tribe strictly among themselves for twenty years, and obtained what he most desired, viz: great uniformity. But many of his best heifers were hopelessly barren, and he was obliged much against his will, to resort to a new strain of blood, which he obtained in Belvidere, whom he purchased of Mr. Stephenson. As a result of this cross, his animals received new vigor, while at the same time their peculiar firmness and style was retained.

The editor of the Albany Cultivator, writing

on the same subject, quotes the following remarks from Mr. Berry: Close breeding impairs the constitution and affects the procreative powers. In in-and-in breeding I believe that the procreative power fails first or chiefly on the part of the male.

The editor has the following remarks in regard to the stock of Mr. Robinson: Mr. Robinson purchased a stock of pure Shorthorns for his estate in Scotland, and pursued strictly the course of in-and-in breeding; the consequence was his cattle soon became feeble and delicate, very bad breeders, and many died of consumption. By resorting to Mr. Colling's stock and the use of one of his bulls for a few years, his stock was renovated and assumed their former beauty and vigor.

Mr. Stephens in the Farmer's Guide, has some remarks on this subject so much to the point, that I copy them entire:

The immediate effects of breeding in-and-in, or employing animals nearly allied by blood, to procreate their kind, are remarkable. The bone becomes very small, of condensed texture, and fine quality. The skin is so thin as to receive the appellation of papery so open of texture as to be sensible to the least change of temperature; and hence animals bred in-and-in are very susceptible of catarrhal affections, and on which account are liable to consumption. The carcass is much reduced in size, and the disposition to fatten increases to such a degree that the animal may be said to be always in a condition to be slaughtered. The hair is short, smooth, and thin set, and the wool short, thin set and watery; and both hide and fleece lose a large proportion of weight. The body assumes a change of form, the barrel being beautifully rounded, but seems stuffed, as it were, within the skin. The extremities are very fine, the head and hoofs small, the ears thin and broad, and the head of the sheep is almost bare of hair, of a blue color, very liable to be scalded by the heat of the sun, and attracted by the fly. The necks of cattle and sheep are thin, and droop with a downward curve between the head to the top of the shoulder. The eyes are often affected with wateriness. Lameness frequently ensues in one of the limbs. The constitution is evidently much weakened. I have seen many animals that were in-and-in bred, and they were either small in size, or deficient in constitution, and these last died prematurely. In one instance, although the animal escaped both of these defects, he had a nervous affection of the eyes.

From the above facts we may infer that in-and-in breeding may be pursued where the animals have great substance and vigor—especially if they are somewhat coarse, or when as is sometimes the case, the breeder wishes to concentrate some particular strain of blood. But in either case it must be pursued with great caution, and must not be carried too far. Some of

the most successful of breeders have adopted the style of breeding in twice, and then breeding out.

Finally, the breeder should not attempt it unless he is possessed of great skill and judgment. —*American Stock Journal*.

SHOULD WE SOW THIN OR THICK.

The following article translated from a recent number of the *Journal D'Agriculture Pratique*, contains much that is deserving the thoughtful attention of our readers. It relates to a much vexed question, and we shall be happy to be informed of the views and results of Canadian farmers on the subject. The amount of grain for seeding a given amount of land must doubtless, always in some measure, depend on the composition and state of the soil, the character of the season, time of sowing, varieties cultivated, and other conditions that would occur to the minds of observing and practical men:—

In general, agriculturists of rich countries and well-cultivated lands say, "Sow thin, you will always have sufficient seed;" while, on the contrary, those of poor soils say, "Cover the field with seed, you cannot put on too much." Are not these opinions contrary to good sense? Putting a large number of plants into land which does not contain nutritive principles, and few into soil which contains much nourishment, must be against all reason.

Let us inquire from whence these notions spring, and begin by establishing in principle a system which can be beneficial to agriculture, namely thin sowing. Here we would remark, in passing, that sowing in rows with a machine which does not put two grains where there ought to be only one, nor leave only two where there ought to be four, is a true progress, and a great step towards amelioration based upon reasonable practice. Under the impression that by sowing a large quantity of seed the crop would choke the weeds, we have sometimes been tempted to try the system; in fact, we have adopted it for some cultures, such as colza for example, but the results soon taught us a lesson.

If we sow very thick upon a poor soil or thin bed, each grain of wheat, barley, or oats only gives one stem, which produces a single ear; sow again thicker, the cereal will be poorer still, and the ears more miserable; but as all plants by an invariable law give some grain, should the stems be still thicker and poorer, will the stems still form themselves? Without doubt the stems will be weaker in proportion as they are numerous, because we shall have put fifty plants upon a surface which cannot nourish more than ten. We shall then have a yield in

inverse proportion to the quantity sown, and the more we sow the less we gather in proportion, for this reason: as soon as the roots are developed they get entangled with one another, and in fact dispute the nourishment found in the soil; consequently they will always be poor and weak. Might we not compare the cultivator who sows thick, to him who upon land where there is put poor fodder, keeps three times more cattle than is fed upon good pasture?

In some localities nearly three hectolitres per hectare of cereals are sown, and sometimes even more. I have tried these enormous quantities, then diminished them gradually, and, in proportion as I lessened the quantity, the yield increased. I now sow 125 litres (220 pints) per hectare (or nearly 90 pints per acre), and it is that quantity well planted which gives me the best produce. I say well planted, because I think that every grain ought to be well buried.—Thick sowing is, then, preparatory to a thin crop.

Let us inquire now what takes place upon a soil well prepared, where the bed of vegetable earth contains a large proportion of humus.—The plants having room to extend their roots, strike them deeper and nourish them, obtain a strong vigorous vegetation, and are in better condition. The stalks multiply in as great a number as the earth can nourish, while we shall be sure of having nothing but healthy plants possessing all their faculties, and which will probably give a maximum produce.

Upon a surface of a metre (1.1-5th of a square yard), if I sow ten thousand grains of wheat, each plant will only have a centimetre (or $\frac{1}{4}$ of a square inch), and it will be impossible that the plants can arrive at perfection. Again, if I sow upon that same surface only ten, each root, having space to extend itself, will tiller until the soil is full; but it will not form one ear more than the earth can nourish.

In order, then, to have plenty of tillers, we must sow thin. We do not pretend to state the exact quantities which will produce a good crop. We have mentioned 125 litres for cereals; but a very fine harvest may be obtained from less seed. For this reason we do not approve of calculations of produce taking for their base the quantity of grains sown. The quantity gathered per hectare appears to us more correct. In fact, if I sow some grains singly upon a large surface, the plants will develop themselves in an extraordinary manner, and I shall have an enormous produce compared to the quantity of grain sown; but very little compared with the extent of ground. By this means we shall gather thirty or forty to one, being, however, a small return per hectare. It must therefore be left for the cultivator to judge the quantity of seed required, taking care not to diminish it beyond what is necessary for the stems to fill the soil.

Colza, planted or sown very thick, throws up a long stem very accessible to frost; then, early in spring, the flowers become developed, and if

there is much damp, or frost, the grains cannot form, and the crop will be almost, if not entirely, a failure. On the contrary, if sown thin the stems may lose their first flowers without injury, because the plants have other resources. They are vigorous, consequently the lateral branches soon form and give birth to flowers which produce good seed. There will then be two chances of success with thin seed plots or plantations, even when we do not reckon upon the vigour of the plants forming the greatest quantity of grain.

Buckwheat sown thick pushes out a stalk, which flowers and fructifies quickly, as if it felt its weakness; but, supposing the first flowers do not come to perfection, which is frequently the case, no lateral branches are formed, and the harvest is next to nothing.

I have heard it remarked, that weeds develop most rapidly when seed is sown thin or in rows; but it appears to me that it would be better to destroy the weeds by second hoeing or cleaning than to run the risk of spoiling your crop, which there is great danger of, if it is left to fight its way amongst the weeds.

This year the seed is sown under very favourable circumstances. The winter having been mild, our wheats are as thick as meadow-grass. The question is, Will the harvest be the better for it?

Why not sow early in good sound land, bury all the seed, and put in only the necessary quantity? What economy—what increase of produce may we not obtain for France? Doubtless numerous objections will be made by various cultivators—such as these: "My soil is so meagre, that in order to obtain sufficient stems I must cover it with seed." "What advantage can be gained from sowing three hectolitres of seed in order to gather six or ten?" "Would it not be better to bestow upon one hectare the manure and labour we should have spent upon two? We should sow three times less, and gather double."

Some time ago it was remarked, with reason, "The worst weed for the corn, is corn."

J. BODIN.

Director of the School of Agriculture at Rennes.

THE FARMERS, THE ROOKS, AND SMALL BIRDS.

We find the following communication from an old sportsman and experienced agriculturist in a recent number of *Bell's Weekly Messenger*, (English). The reader will find in it something to gratify a rational curiosity. There can be no doubt but birds are often of the greatest service to the farmer in all parts of the world by keeping in wholesome check the ravages of insects, and thus assist in maintaining the balance of creation. In new

countries like Canada, where wood largely preponderates, birds as well as other wild creatures no doubt sometimes require to be kept down by human artifice; but no where can an indiscriminate slaughter of birds be carried out without inflicting irreparable injury to crops whether of the farm or the garden:

In the *Royal Agricultural Journal*, Mr. Spence quotes from a provincial paper, *The West Briton*. In *The West Briton* it was stated that Mr. G. Pearce, of Pennave Govan, had saved an acre and a half of turnips, sown to replace wheat destroyed by the wire worm, and attacked by hosts of these larvæ, by setting boys to collect them, who, at the rate of 1½d. the hundred, gathered 18,000, as many as 50 having been taken from one turnip. Thus at the expense of only £1 2s. 6d., an acre and a half of turnips, worth from £5 to £7 or more, were saved, while, as the boys could each collect 600 wireworms a-day, 30 days' employment was given them, at 9d. a-day, which they would not otherwise have had. To have earned that sum in 30 days, one boy at 9d. per day in 12 months, excluding Sundays, would earn £11 14s. 9d. Four hundred wireworms weigh about an ounce; two hundred and two meal worms weigh about an ounce; and I have estimated the two. Thirty boys gathering 18,000 wireworms a day would be 531 years and 295 days collecting 468,000 lbs. or nearly 209 tons weight of wire worms, reckoning 313 working days to a year, excluding Sundays.

Volume the 5th of the *Royal Agricultural Journal*, p. 208, Mr. Clitheroe, in the *Gardener's Magazine* so quoted, observes that in the county of York, in the neighbourhood of his native place, there is a rookery belonging to W. Vavasour, Esq., of Weston-in-Wharfedale, in which it is estimated that there are 10,000 rooks. One pound of insect food a-week is a very moderate allowance for each bird, nine-tenths of their food consisting of worms, insects, and their larvæ. Here, then, there is the enormous quantity of 468,000 lb., or 209 tons of worms, insects and their larvæ, destroyed by rooks of a single rookery in one year. Each rook in this calculation is given to have picked up 1 lb. of food per week, nine-tenths of which was of insect matter, the wireworm and larvæ. I have kept rooks tame, and to my certain knowledge they will consume more than the quantity above stated. In 12 months, then, 10,000 rooks destroyed 468,000 lb. of the most destructive foe to the farmer, and effected, at a trifling cost to the farmer in grain taken at seed time and harvest, what it would have taken 30 boys, at £11 14s. 9d. each per year, to have done in 531 years and 297 days. One rook would collect 299,820 worms in one year, and one

boy would collect in 312 days 187,800 worms; consequently one rook's work is nearly equal to one boy and six-tenths of another boy, which would make 10,000 rooks' work equal to that of 16,000 boys; and the wages of the latter, at the rate of 9d. per day for each boy, would amount to £600 per day, or £3,500 per week of six days, or £187,800 for 52 weeks. Upon Mr. G. Pearce's calculation, his acre and a half of turnips saved was worth from £5 to £6, say on average £6. *According to this the produce saved by 10,000 rooks in a year would be worth £998,400, extending over 1,497,400 acres.*

What man in his senses, then, would destroy the rook?

There is another fact that agricultural observers are apt to forget. When they see the rooks pulling the young turnips or the grain, if they will take the trouble to closely examine the spot, they will find that the rook has been working *for the farmer, not against him*, and that the turnips or grain so pulled up were at the moment being devoured by a worm or insect, and that the rook only pulled up and exposed to the sight seed already damaged or destroyed, and in laying bare the one destruction he stopped the further ravage, and by putting an end to the turnip or seed that had been poisonously assailed, and would have come to nothing, he found and exterminated the progenitor of legions of insects, that would have damaged the soil in future years. Let me, then, beseech the farmer to abstain from poison, and from the wanton destruction of the most useful life. *The rook is really the cheapest servant that the farmer has.*

GRANTLEY F. BERKELEY.

MANURES.

We subjoin an extended extract from a lecture recently delivered before the Ayrshire Agricultural Association by Professor Anderson, Chemist to the Highland Society of Scotland:—

Artificial manures differ from farm-yard manure in this respect—that, whereas the latter contained everything that the plant contained, the former supplied only certain parts. Artificial manures could never be put together in the place of the farm-yard manure. They could never permanently cultivate the soil by their use alone, but merely employed them as valuable auxiliaries. Their use was principally to supply the soil with phosphoric acid and nitrogen; it was not necessary that they should be employed to supply lime, magnesia, &c., which could be easily supplied otherwise. They were used to supply these things which had been carried away in more than their fair proportion. The most of the

artificial manures were of this kind. Some of them had only one ingredient, as, for example, nitrate of soda, which contained only nitrogen. Ordinary superphosphate and dissolved bones supplied both phosphoric acid and nitrogen. When they came to Peruvian guano they found that it supplied phosphoric acid, ammonia, potash, and certain other substances, such as magnesia, &c. The lecturer referred to the difference between the mode of applying farm-yard and artificial manures. When they applied 20, 40, or 50 tons of farm-yard manure to the soil they absolutely applied a greater quantity of valuable substance than when they applied 5 or 6 cwt. of artificial manure. The principal difference in the action of the two species of manures was that farm-yard manure might be applied in great quantities, but it was sometimes, owing to its condition, a considerable time in the ground before it came available to the plant, while artificial manures had the advantage of being instantly available. This was preeminently the case with Peruvian guano. When they passed from this to bones they found that they were not immediately available, and, in point of fact, in the last century when bones were used in enormous quantities, they did not at once produce the effects which were expected. But a great step in advance was made when these bones were dissolved by means of acid, and brought into a state in which they were immediately available to the plant. After this had been accomplished it was found that other substances could be employed in this manner as well as bones. Some years ago coprolites had been discovered, which were now of great importance as manures. They were first found in Suffolk, then in Cambridge, and later in France. Enormous quantities of these had been found and turned to account in the manufacturing of manures. They owed their introduction as manures to Mr. Lawes, a very distinguished agriculturist. The nature of these coprolites was a subject of great importance, and one about which there was a great difference of opinion. It had been maintained that they were very inferior to superphosphates derived from bones, and as the subject was one which had been somewhat warmly discussed, he had been asked to say a word or two with reference to it on the present occasion. The lecturer then proceeded to state that one of the principal recommendations of farm-yard manure was that, besides being a source of food to the plants, it also served to promote decay in the soil, which was essential to their growth. A superphosphate made from bones also promoted decomposition of the soil, and it was here that bones had the advantage over the coprolite. So far as mere supply of food to the plants was concerned, they were equal, but there was a difference with regard to their agency on the soil. He would, however, be

the last person to say that coprolites should not be employed. Nature had evidently intended them for use. What he objected to was making a manure from coprolites and calling it dissolved bones. The correct way was to tell exactly what the manure was composed of. A man could go into the market and buy bones at £6 a ton, and coprolites at £2, and it was not right to sell the cheap article for the dear one. The farmer, in his opinion, was not altogether free from blame in this matter. If he went into the market and asked for manures at a lower rate than could be made, he must make up his mind to receive coprolites. The cheap manure was made up of coprolites. This was particularly the case in London, where manures were advertised so cheaply, but the reason of this was that London manures were just coprolites. The whole thing lay in a nut-shell. If they wanted manures from bones alone, they must pay for them, and if they wished a cheap manure they must take coprolites. The question then came to be, from which can you get the best result? Now, this was a question which only practical experience could solve. In some soils coprolites would produce as good an effect as bones, but this could only be solved by the actual experience of the farmer. In conclusion, he would strongly impress on them the value of experiments, especially when they had arranged to hold meetings for the discussion of agricultural subjects. These, when carefully made, were of the utmost importance to the art of agriculture—an art which had now almost become one of the learned professions.

PREPARATION OF BONES.

Your letter in relation to the preparation of bones for plants, and their value for grape, is at hand. My other duties at present forbid my doing justice to this subject; but hoping to be able to touch it again, I will, in all brevity, notice the points referred to.

First, then, as to preparing bones for plants. The process is partly *mechanical* and partly *chemical*. The bones must be first reduced to a greater or less degree of fineness, by mechanical means, and then be operated upon by chemical agents to render them soluble.

The work of reducing bones to anything like powder, is fraught with almost insuperable difficulties. No practicable method of doing it has yet been devised, and yet the success of the subsequent chemical process, is often dependent upon a degree of fineness being attained that has not been reached in any rawbone superphosphate that I have seen. To reduce raw bones by hand without the aid of machinery, is a most laborious and unre-munerating operation.

Burned bones are very easily reduced to an

impalpable powder, but after reduction, could be farther reduced by fermentation, as raw bones may, and by burning they lose about four per cent of nitrogen, which is very desirable to preserve.

Raw bones are very easily burned by piling them up with wood, and setting fire to the latter; a good wheelbarrow load of wood will burn a ton of raw bones, and leave a mixed white and coally mass, which is very easily broken up with a mallet, flail, or other implement to beat them with.

The chemical part of the process is as various as are the means that may be employed to perform the mechanical part.

Bones may be fermented in a great variety of ways. They may be kept moist and warm till they are broken up, under the decomposing action of the organic matter in them. Or they may be mixed with decomposing putrescent matter, by constant contact with which they are gradually decomposed. In this way whole bones may, in the course of a few months, be reduced, and thus the labour of breaking them up, by mechanical means, be avoided; if, however, they are first somewhat broken up it would be better, as the fermenting action is thereby rendered more intense. The bones, either whole or after being broken into large pieces, may be thrown into a box, barrel, or hogshhead, and let down into the ground in a moist place, where the draining of the cow-yard, the urine from a privy, the soap-suds from a wash-tub, the slops of dish-water, or any water containing organic matter, liable to become putrescent, may keep them constantly moist. They should not be allowed to become dry, nor should be constantly covered with water, nor should the water pass through them and run away by soaking into the earth. In filling the vessels with bones, dead animals, spoiled meat, hair, wool, hoofs, horns, or any other similar matter may be thrown in with them. The whole should be pounded down to a compact mass. It is by no means necessary that the vessel containing the bones be sunk in the earth; if kept on its surface, and the proper condition of moisture observed, the decomposition will go on, but when sunk, these conditions are more easily kept up.

Another indispensable condition is a proper temperature; that of a comfortably heated room in winter, or of the ordinary temperature in summer, is what is required. The only advantage of using warm liquids to wet the bones, is the temperature thereby attained. It is best to carry out such experiments in summer time, when the solar heat is sufficient to secure the decomposition. It is further, not even necessary that the bones be put in a vessel at all; a hole or sink may be made in the ground and the bones thrown in and treated as above; such a hole should not be of the nature of a *groove*, narrow and deep, but a hemi-

ispherical sink, twice or thrice as wide as deep, and if convenient, it should have a clay bottom.

In all the above cases, a coating of fresh stable manure, thrown over the top of the fermenting mass, to the depth of eight or ten inches, will accelerate the process, and help to maintain the conditions required. Immediately beneath this manure a thin layer of coal dust from the bottom of an old coal pit may be thrown; this will prevent the putrescent mass from evolving offensive gases, and at the same time absorb what little ammonia may be evolved. After from four to six weeks it will be found that the hard bones will have been so far reduced that a spade can be forced down through them without difficulty. Bones, which when fresh, would have required a twenty horse-power engine to crush them, now crumble beneath the foot of a man. After about from two to three months they may be shovelled out, cut, pounded, and mixed up with a shovel, and applied to the land.

Another process is to make alternate layers of bones and fresh stable manure in a sink, and to throw over them any of the liquids mentioned above, and to cover the whole with stable manure, and let them ferment from eight to ten weeks, when the bones can be pounded and mixed up for use. Still another process is to pack away the bones, as in the first method above, in a hoghead, or box, and mix good unleached wood ashes with them, (at least a bushel of ashes to a barrel of bones) and pour water or soap-suds over them; in this case they may be covered with water at first, and after five or six weeks this water may be allowed to evaporate, and a decomposed, soapy mass will remain, which, on drying, may be pounded up. This mass is the best possible manure for grapes, as it contains phosphate of potash, both the acid and base of which are required in large quantities by this plant.

If the bones are burned, or if a phosphatic guano, or a mineral phosphate be used, since they contain no fermentable organic matter, they cannot be decomposed by the above methods, at least not by all of them, but the application of sulphuric acid to them will convert them into superphosphates, in which state their phosphoric acid is readily assimilated by plants. Some manure makers have talked nonsense about phosphoric acid rendered soluble from mineral phosphates, not being assimilable by plants; such vagaries are altogether beneath criticism, and serve only to exhibit the ignorance of their authors.—*Gardener's monthly*.—Dr. Pugh.

THE PLOUGH AND CULTIVATOR.

The plough is, after the spade, the most ancient instrument of husbandry extant; and however rude and uncouth its original con-

struction may have been, as exhibited on coins, medals, and other works of art handed down to us by all the nations of by-gone civilization, it was, in any and in every form, a great saving of labour to the husbandman, to be able to extract from oxen that service which the spade and the arm of man had previously executed. So far as the forms of the ancient Egyptian, Grecian, and Roman ploughs are depicted on these vestiges of national art, they appear to have been calculated rather to scratch the soil to the depth of four or six inches, than to turn it over in a continuous and unbroken furrow-slice. Yet, if we may credit the historians of those countries, heavy crops of wheat were obtained from the land, especially in Egypt, where, we are told, as much as from two-hundred to five-hundred-fold the seed sown was sometimes reaped—a produce that would make even an enlightend English farmer open his eyes to the widest extent possible.

Very different in construction and operation is the modern plough of the English machinist. Science, art, judgment, and perseverance have been called into exercise to produce an implement that would fulfil the expectations and requirements of the Royal Agricultural Society, as the assumed exponent of the opinions of the agricultural body. The desiderated perfection of the operation of the plough, as insisted upon by that institution, consists in turning over the furrow-slice in the most perfect unbroken manner, without even a crack in it, and laid at an angle of 45 degrees, and at the smallest expenditure of power, as determined by the dynamometer. Such being the law laid down for the guidance of the competing machinists, they have exerted their talents and skill to the utmost, and have produced instruments that may be justly termed works of art, so scientific, artistic, and elegant are they in their construction, and so cleverly do they fulfil the requirements of the judges of the Royal Agricultural Society. We can, in fact, conceive of no operation in husbandry more beautiful than that of a clover-lay ploughed up by one of Howard's or Ransome's latest-constructed implements. By them the flag is turned over so gradually and carefully that it lies recumbent like an elongated unburnt brick, without a crack, and exhibiting nothing of its previous covering except a thin streak of verdure at the point of contact with the preceding furrow-slice.

About the latter end of the last century a Mr. William Lester, of Northampton, M. P., invented an instrument which he termed a grubber or scarifier; and so useful did it appear, that the Society of Arts awarded him one of their silver medals for the invention. In the first instance, the grubber appears to have been intended rather to scarify the sur-

face for the extirpation of weeds, than for the purpose of more serious and effectual cultivation; and this, we believe, was the chief object to which its employment was confined, until Mr. Smith, of Woolston, brought it into direct competition with the plough, by attaching it to his steam apparatus, instead of that time-honoured implement. This operation being in direct contrast with that of its antagonist, he has quaintly termed it "the smashing-up system, in contradistinction to ploughing. The success the implement has met with, in the increase of produce from this stirring the soil, instead of turning it over, has led the machinists to effect improvements in the construction of the same implements worked by animal power, so as to adapt it to the purpose of deep culture, instead of confining the performance to scarifying the surface for the destruction of weeds. It has now become an important question, whether the principal object of tillage—viz, the speediest and most effectual preparation of a seed-bed—is not better accomplished by the cultivator than by the plough, especially on the refined principal laid down by the Royal Agricultural Societies on the dicta of their appointed judges; and it certainly does appear, from the testimony of innumerable persons who have used Smith's steam-cultivator, that the turning-over of the sod is not a necessary part of tillage, and that the unbroken furrow-slice is not the most effective operation for preparing a speedy a desirable seed-bed.

This question is now, in the opinion of many, the most momentous one before the agricultural public; and upon it, in connection with steam-culture, subsoiling, and thorough drainage, depend the future success of the husbandman. The late Mr. Pusey was, we believe, the first who foresaw the value of Lester's invention as a cultivating implement, and he unreservedly gave his opinion of it in public, and this expression brought it into general notice. "I may venture to say," as Mr. Pusey writes, "what may appear theoretical, that if ever steam be successfully employed by cultivation, it will probably be less by ploughing and digging, than with an implement like one of these cultivators." Thus far the prophecy is in part accomplished. Smith invented the smashing-up system; and Fowler has also found it necessary to yield to public opinion, and apply the cultivator as well as the plough to his steam apparatus, in order to meet the wishes of his friends and supporters.

It becomes an important question with the machinists, whether, in endeavouring in the race of competition to comply with the requirements of the Royal Agricultural Society, they have not so much refined upon the construction of the plough as to lose sight of the main object of tillage—the quickest and most

effectual preparation of a seed-bed. It is now universally agreed by all intelligent men that the more completely the pulverization of the soil is effected, the greater are the chances of success; and certainly the upturned and unbroken furrow-slice is scarcely the fulfilment of that object. If the soil is a strong clay, be the weather either wet or dry, it will require days, and sometimes weeks, to mellow the furrow-slice so as to be able to reduce it to a comminuted state, fit for a seed-bed.

It is worthy of remark, too, that whilst almost all who have used Smith's smashing-up implement agree in ascribing to it a considerable increase of produce—and the same is the case with Fowler's steam plough, which also breaks up the furrow-slice instead of turning it over in an unbroken state—on the other hand, we have never heard of an increase of produce effected by the operation of the ploughs constructed to produce the unbroken furrow-slice. The contrast in this respect is most striking, and of itself must lead the husbandman to inquire more minutely into the merits of the two systems.

The point we have raised has for some time engaged the attention of many of the most intelligent of the agricultural body and the conviction is gaining ground that the cultivator is the quickest, the readiest, and the most effectual implement, whether worked by animal or steam-power—but especially if by the latter—for converting the soil into a proper seed-bed. Both the Royal Agricultural Society and the machinists will have to meet this question; and, at any rate, the unbroken and uncracked furrow-slice must be given up and the desideratum substituted, of a perfectly comminuted and deeply cultivated soil, constituting by one operation a well-prepared seed-bed.—*Mark Lane Express.*

CAMBRIDGESHIRE AND LINCOLN-SHIRE FENS.

[We take the following interesting communication from a recent number of the *Times*, (England), written by Mr. John Algernon Clarke, of Long Sutton. Eds.]

Every one knows that the great level of the Fens, more than a thousand square miles in area, is a tract of alluvial deposits which have filled up to one almost uniform height a bay about six times larger than the Wash. The original coast consists of hills of chalk, green sand, gault, Kimmeridge and Oxford clay, oolite limestone, and drift beds of boulder clay and gravel, surrounding the district from Hunstanton and Lynn nearly to Cambridge, thence to Peterborough and Lincoln, and towards Wainfleet, leaving a belt of the flat along the North Lincolnshire coast up to the Humber; while numerous islands of the same upland

ground rise up through the horizontal plain, as at Ely, Chatteris, Whittlesey, and March. It is generally understood, also, that while the fat grazing and corn lands bordering the shore for several miles inland are salt marshes, reclaimed by embankments from the warp-laden tides of the Wash, the black, vegetable soil of the interior and larger portion of the Level has been obtained from the drainage and tillage of deep peat mosses and shallow lakes once existing as a woodland country. But recent excavations for lowering the great network of cuts which carry off the downfall waters and convey the high land floods to sea have explored more deeply the structure of the Fen alluvials, and from a mass of sections and data collected with a view to future publication, I can state in a few words the main facts by which the Fens interlace archæology with geology. In the Saxon and Norman ages (according to the monkish chronicles) meres and pools alternated with immense bogs, and turf-moors with grazing and hay grounds, while some portions were clad with moisture-loving trees, and vert afforested by Royalty. For though the entire plain would be plunged several feet deep under water were the present valve-door sluices removed, the state of the region before the invention of sluices was not necessarily one of continual deluge: the peat being inflated with water like a sponge, its surface was elevated many feet above its modern level. Still further back we find, in the Roman era, the Great Level had already become a fen, though some localities may have borne timber for the axes of the busy legions. A Roman crossing the entire breadth of the Fen country, from Downham in Norfolk to Whittlesey and Peterborough, consists of a gravel causeway, three feet in thickness and 40 to 60 feet in breadth, with a foundation (in place) of oak timber and ragstone, resting upon the peat, which has become partially solidified by the weight. At some remote date the Great Level was a forest. Prostrate timber is found almost everywhere under the peaty soil—the roots of the trees generally standing as they grew, the trunks broken off, and in some districts lying in a certain direction, as if hurled down by some common catastrophe of storm or inundation. The remains testify that in some localities oaks and firs attained a size and altitude now, perhaps, unknown in England, while in other places only a more aquatic growth of alders, birches, willows, and sallows prevailed; the wild boar devoured roots and mast in the recesses of the thick woods; the aurochs or bison, as well as the red deer and stag, herded on the grassy glades, and the beaver colonized upon the shady margin of streams and pools. From the low level of the clayey surface upon which the woodland flourished (such that, were the clay now bared of its peaty covering, it would be drowned by salt water 10ft. to 20ft. in depth) it is clear that a subsidence of the country has occurred since the growth of the

timber. This must have been long before the time of the Romans; for the marine alluvium occupying the "Marsh" districts between the true (or peaty) "Fen" and the coast, and in places 20ft. in thickness, rests upon the peat with its embedded timber and bones of animals, and Roman remains exist upon the surface of the alluvium. The peat, forming a subterranean forest" underneath the warp land of the marshes near Lynn, appears as a "submarine forest" in the Ouse estuary seaward of Lynn. Again the surface peat of East Fen (north of Boston) enters under the marsh alluvium, and crops out on the shore. The submarine forest visible at low tide, appears for many miles along the North Lincolnshire coast, and, 60 years ago, extended a mile out to the sea. Much ground has there been eaten away by the waves within the historic period, and it is evident that the ruined forest with its thick covering of tidal warp once extended far out into what is now the German Ocean. That this marine alluvium, or "old marsh" land, had been deposited before the Roman age is demonstrable. Two centuries ago the outermost sea barrier was what is called the "Old Roman Bank." A document of the reign of Henry II. speaks of this immense engineering work as "the Old Sea Bank." It is certain from the low level of the land that the many towns and villages contiguous to the bank could not have existed before it had bared out the ocean: and most of them are named in Domesday Book as having existed (many with their salt pans) in the days of Edward the Confessor. Wisbeach could not have been out of the salt water had there been no embankments; yet Wisbeach and its river embouchure are distinctly spoken of in a Saxon charter of A.D. 664. Still further, some of the towns guarded by this bank have Roman names and Roman remains; the embankment communicates with several undoubted Roman sites, and while many Roman relics are discovered on the inland side, none have ever been found on the seaside of the bank. The level of the country and the position of the bank show that no subsidence has occurred since the Roman age; while the fact of the bank standing upon the thick stratum of marine warp which overlies the peat forest confirms the inference from the Roman road, that the subsidence and flooding of the woodland terrain happened long before the Romans visited the scene. But the forest had been peopled by the aborigines. Occasionally the buried timber is met with, bearing marks of human labour, and stone celts have been met with near the trees. In Downham Fen were found under the peat, and resting upon the subjacent clay, pieces of wood, piled for making a fire, with the embers still left in the centre. In Deeping Fen was exhumed a canoe 46 feet in length and nearly 6 feet in width, hollowed out of a single log; it lay below the peat and above the clay, resting upon cross timbers, which had been broken by its weight.—

The history of the Fen alluvials does not end here. The clay upon which the forest grew is a soft alluvial deposit, with a surface slightly undulating, like that of shoals in the Wash, and varying exceedingly in depth from a few inches to 20 feet, filling up a bay of irregular bottom. It is guttered in many places with silted-up channels or creeks, and it would appear that an elevation must have occurred before this wet mud could have been clothed with wood. Sinking through this "blue battery clay" is found sometimes the Oxford clay, or other upland stratum, or beds of boulder-clay, of sand or gravel. But over large portions of the Great Level the soft clay reposes upon a second subterranean forest of oak, yew, and other timber, rooted in drift clay, as at Boston, 18 feet from the surface of the land. Some of the trees are of enormous dimensions, representing growths of several centuries. There was plainly a depression of the country before this earliest forest was submerged for the disposition of the blue clay. The age of this forest is fixed after the dispersion of the boulder clay, but before the accumulation of the yellow drift gravel of Deeping, which has been found overlying the lower peat and its embedded trees. A remarkable circumstance is that this forest may be seen far out in the Wash Bay in particular states of this tide; and a stone axe has been discovered in the cleft of a blackened trunk, two miles from high-water mark, off Hunstanton. Certainly the Great Level possesses abundant written records of its physical condition in the Saxon times; it abounds with Roman and British antiquities; the relative levels of its alluvial strata and entombed forests, in juxtaposition with an ocean artificially barricaded from the flat, tell of elevations and depressions within the human period; and I believe that careful study of the various deposits (estimating the age of the warp beds by the rate of accretion of modern inclosures, and the age of the forests by the season-rings of the trees) would go far to solve the question of the antiquity of man, and to throw a bridge of years across the chasm now sundering chronology from the era of the stupendous glacial convulsions.

HAY MAKING.

There is something beautiful in the operation of making hay when the weather suits. This is so with Timothy, with all kinds of grass, but especially with clover. Cut it when in blossom, when stem and head are tender, and juicy and fragrant. The scythe—if you are so unmannerly as to cling to the old poetic usage—will "walk" through with the greatest ease, showing what a tender thing you have. It is precious, and requires careful handling. Let the sun wilt it; though it would be better if the sun did not see it at all. His rays are too fierce, and will scorch it and hurt it. Better if in the old fashioned winrow, than spread with the machine. If mowed with the machine, and there

is time, put it in winrows, broad and somewhat thin, so that the air can get in. This will measurably relieve it from the sun. Then, if there is warm, dry air stirring, a few hours will sufficiently wilt the grass to fit it for the cock. It should always be cut when the dew is off. Then throw it in small cocks, say of half a hundred weight to the cock. Consult your barometer, and if you are sure of your weather, leave your cocks untouched for about three days, or nearly that. If rain threatens, clap on your hay-eaps, or you are safe in doing it in the start if you like. They will interfere little with the curing process, and will shed rain. Then, if your weather is warm, with a little air in motion, let a hand precede the wagon, and turn over the cocks, loosening up the hay a little. This, with the stir the hay will get in loading and unloading, will be sufficient. And now you have hay that is hay—green, with a slight touch of amber. You have every head entire, not falling into chaff. Every leaflet is there, tenacious of its stalk; the entire stem as the scythe left it, is there—pliable, not brittle and dried to a crisp, with the heads and leaves missing, or lodged on the barn floor, in the mow-seat, in your neck and oosom, and scattered on the field. But here you have heads with the hue of the blossom still there—a flower "pressed"—that is making hay. In this—"pressing your flower"—is the whole secret. Wilt and cure, but dry not. *Cure* is the only word. The wet weather in many parts of the country during the hay harvest has brought into requisition hay-caps. We are glad to see it. On the whole, they are a benefit. If the weather should continue wet beyond the time allotted for its cure, in with it the first moment it is dried off on the outside. Your hay is cured; but there is still some moisture left; and you have no means to give this to the air, so sprinkle a little salt on each load, amount according to moisture. Your hay, when fed, comes out about the same; is as readily taken by the stock. Even should it change a little in the mow, how much better so than a bulk of brittle sticks, with all the sugar and the starch out, and all substance. Such "hay" will starve cattle, and is a pity to look at. There is no poetry in such "hay," neither in the making of it, nor the feeding. There is less labour in making it in the right way; and the wettest season will not spoil it, as in the other cases. Such hay—or grass cured—will fatten your stock. It will have the summer effect upon your cattle, upon the bowels. They will eat it with avidity, and brighten up over it. Roots may be dispensed with in the presence of such hay. 'Tis thus one may have summer with his cattle. Such a man is a benevolent, as well as an economical and wise man. The sight of such hay shows the prosperity of a man. There is but little in the country as yet, but it is fast increasing. It will soon be the only hay; and then a better era has dawned for the cattle, horses included—and man also.—*Valley Farmer.*

THE CROPS IN THE U. STATES.

We are indebted to the courtesy of Mr. Grinnell, chief clerk of the Agricultural department at Washington, D. C., for an abstract of the returns to the department of the amount and condition of the crops in twenty-two States reported from in May 1863, from which we give the following very condensed summary.

The number 10 represents an average of the crops, both as to their *amount* compared with the crops of 1861, and their *appearance* in May, 1863. A number above or below 10, represents as many tenths as it is above or below it. Thus 8 is two-tenths below an average, and 14 is four-tenths above it.

The table from which this statement is extracted, is prepared by first taking an average from the returns of each county, and from these an average of each State.

	Average amount of land sown com- pared with 1862.	Appearance of crop at this date.
Winter Wheat,	11	9½
Spring Wheat,	10	10
Rye,	10½	10
Corn,	10½	9½
Oats,	10½	9½
Potatoes,	11	10
Sorghum,	15½	10½
Cotton,	37	10½

Agricultural Intelligence.

THE ACTION OF SUPERPHOSPHATE OF LIME.

[As this very valuable fertilizer is now made in Canada, and therefore available for use, we insert the following able and interesting paper from the last number of the *British Farmers' Magazine*. Mr. Cox is manufacturing the Superphosphate at Montreal; and his Agents in Toronto are James Fleming & Co., Agricultural Hall. Eds.]

It is only by slow degrees that we acquire valuable information relating to the use of manures. The subject involves, in fact, all those difficulties which gather around the chemist when he is trying to unravel the mysteries of organic chemistry. The unwillingness of former generations to leave long-beaten paths, their dislike to try newly-suggested fertilizers, naturally enough long discouraged such efforts to increase our stock of knowledge. The way in which the introduction of artificial manures was opposed appears, indeed, to modern agriculturists to border on the ludicrous. The Sheffield cutlers were long obliged to pay for the removal of their waste bone-dust from around their lathes and workshops. And when the Lincolnshire

farmers began cautiously to use crushed bones with their turnip-seed, they were of course, at first ridiculed; and then it was very gravely asserted by that class who seem born for opposition, that bones introduced the advent of a black grub or caterpillar; and then, changing their ground, the anti-bonemen contended that it was white clover that the bones introduced. When the next move was made, after Liebig had suggested the use of superphosphate of lime, the opposition men as usual, came out in great force; the very idea of adding sulphuric acid to the land excited their anger and their ridicule. The use of guano also was denounced very vigorously as "a mere stimulant," just as the use of sewage is now by the men who are ever constitutionally the opponents of every new fertilizer, and who complacently consider everything worthless which they do not happen to comprehend.

Then, again, it is only by very tardy advances that the most valuable improvements in the application of excellent manures are adopted. It is now more than fifteen years since the late Philip Pusey suggested the use of decomposed or fermented bones as a drill manure for roots (*Jour. Roy. Ag. Soc.*, vol. viii., p. 417). He showed by various experiments of his own, and those of other considerable farmers, that crushed bones, when previously allowed to ferment, mixed with peat ashes, earth, or sand, were reduced to a state adapted for application by the drill. He next proved by varied trials that the effect of this dressing was as great as that of an equal money value of superphosphate of lime. This mixture was commonly composed of two measures of bones and one of sand, allowed to ferment in a considerable heap. The result of his first trial was, per acre, as follows: 17 bushels crushed bones, costing £2 6s., produced 13 tons 5 cwt.; 4½ bushels superphosphate, costing £1 2s. 9d., produced 14 tons 5 cwt.; 8½ bushels fermented bones and sand, costing £1 0s. 9d., produced 13 tons 5 cwt. Three bushels of the mixture were valued higher than the two bushels of bones, because the heap sunk during the process of fermentation one foot in four, showing from the shrinking of the bones, that there was more than two bushel of bones in three of the mixture. Two years afterwards Pusey recurred to the question (*ibid.* vol. ix., p. 590). It was at the close of the year 1858 that he reported the results of his further investigations, and spoke of the precautions necessary to be taken to ensure a good result.

In that year he mixed bones with peat ashes, coal ashes, sand, mould, and sawdust. The fermentation is equal where the size of the heap is the same; but a small heap, unless carefully enclosed and covered, will not decompose so thoroughly as a large one—perhaps not even then. Whatever the substance employed, it should be in a free pulverized state—should be moistened, and the bones thoroughly drenched. Finely-ground bones decay more than coarsely

ground. Four cartloads, in one heap, heat much better, he found, than four cartloads in separate heaps. As the heat does not maintain itself well within a foot of the surface, it is useful to give the heap an external covering of the same material employed in the mixture. On the other hand, the quantity of ashes or sand employed may, perhaps, be reduced to one-half of the quantity of bones. The following is the result, per acre, of two trials made at Pusey, on the stonebrash, in 1848, with late-sown turnips: $5\frac{1}{2}$ bushels superphosphate of lime, costing £1 17s., produced 16 tons 12 $\frac{3}{4}$ cwt.; 8 bushel of decayed bones, costing £1 2s., produced 13 tons 14 cwt.; soil simple, less than 1 ton. These bones were from a small heap, and not well decomposed. On two other lots, where the bones employed had lain in a large heap, and been better fermented, the yield was just even, viz.: $5\frac{1}{2}$ bushels superphosphate, costing £1 17s., produced 15 tons 13 cwt. 67lbs.; 8 bushels decayed bones, costing £1 2s., produced 15 tons 12 cwt. The superphosphate always pushes on the turnips faster at first, and therefore is best for late sown turnips. For those that are sown early, though this mode of decomposition will not supersede the use of acid, I cannot but hope it will afford the farmer in many circumstances a useful choice.

Since the early efforts of Pussey, this mode of employing bones has been slowly extending, the preparation of the dressing varied and accelerated by mixing the bones with a considerable amount of farmyard manure by some of the great Norfolk light land cultivators; and I am strongly inclined to believe that they will hereafter make further improvements in preparing in a similar way a friable manure applicable by the drill. In a recent valuable paper by Professor Voelcker, to which I shall presently have occasion to refer, he observes: "Perhaps the best manure for growing roots on light land is a mixture of bonedust and rotten dung. On several farms in Norfolk this mixture is now used, in preference to all other manures, with most signal benefit. The best way to make this mixture is to cart into a corner of the field the yard manure about three months before turnip sowing begins. At the same time the bonedust, calculating 6 to 8 bushels per acre, is carted next to the place where the manure is to be put up in a heap. In making the heap, first a thick layer of dung is placed upon the ground; a thin sprinkling of bonedust is put upon it, then a layer of dung; again a sprinkling of bonedust; and so on, until all the bonedust and dung are placed in alternate layers in a heap. About a month before sowing the turnips the heap should be turned over. Proceeding in this way, we shall find that the fermented dung disintegrates and partially dissolves the bonedust to such an extent that by the time the manure is ready to be distributed over the turnip-field nearly the whole of the bonedust will have become decomposed and uniformly amalgamated

with the dung. This excellent plan appears to me by far the most economical mode of dissolving and applying bonedust on light land, which, as has been stated, should, if possible, be manured with at least half a dressing of ordinary yard manure, in order that the deficiency of potash and organic matter in the soil may be supplied."

• It is at the end of this month that the use of phosphatic dressings will be the most general throughout our island. At such a time the results of the labours of Professor Voelcker, but recently published, will be of no mean value to the agriculturist (*Jour. Roy. Ag. Soc.*, vol., xxiv., p. 37). It is indeed of the highest value to the cultivator to understand the chemistry of his noble profession, and he will ever be thankful for any such additions to our limited stock of knowledge. The Professor proceeded with his usual caution, step by step. The primary effort was to show by the analysis of the plant that phosphate of lime is an essential ingredient in its composition; next, that the Creator of its marvellous seed has bestowed an adequate supply in that seed for the earliest requirements of the plant; then, that the soil of our cultivated lands does not usually contain an amount of phosphate of lime sufficient to promote the most luxuriant growth of the plant; and lastly that there is much to be yet generally accomplished in the mode of applying superphosphate of lime to our root crops.

Now, to begin with the seed. The Professor notices the care which was taken by its Divine Architect to provide plants at the earliest periods of their existence with a constituent which possesses so remarkable an effect in pushing on the young plant, but is seldom present in soils in larger proportions than a mere fraction of a per cent. (commonly not more than from one to two-tenths of a per cent.). "On examining the ashes of the seeds of all plants, it will be found that all contain much phosphoric acid, either in combination with alkalis, or with lime or magnesia. During the germination of the seeds the phosphates contained in them appear to be rendered soluble. The most important mineral food constituent is thus provided by the seed itself, and placed within easy reach of the infant plant just at a time when an amount of phosphoric acid in all soils would be inadequate to induce a vigorous development of the whole vegetable organism.

"In England the application of purely phosphatic manures is confined almost exclusively to root crops: why is it that these manures, as a rule, benefit root crops more than cereals and other crops? The idea naturally suggests itself that turnips or swedes require more phosphoric acid to bring them to perfection than wheat, barley, and oats; and an examination of the ashes of these several crops confirms this impression. A given quantity of ash of turnips, it is true, contains less phosphoric acid than the same quantity of wheat ash; but since the total

amount of mineral matters or ash in a crop of turnips is very much larger than that in a crop of wheat, the amount of phosphoric acid which is removed from the soil by the one is very much more considerable than that taken up by the other.

"Taking the average composition of the ash of turnips, bulbs and tops, deduced from the recorded results of numerous experimenters, we have in 100 parts

	Bulbs.	Tops.
Potash	42.0	20.0
Soda	2.0	3.0
Magnesia	2.0	1.0
Lime	11.5	30.0
Phosphoric acid	9.0	5.0
Sulphuric acid	11.5	11.0
Silica	1.0	1.0
Chloride of sodium	6.0	8.0
Chloride of potassium	—	5.0
Carbonic acid	15.0	16.0

100.0 100.0

"The average composition of the ash of the grain and straw of wheat is as follows :

	Wheat.	Straw.
Phosphoric acid	50.0	5.0
Sulphuric acid .....	.5	2.7
Silica	2.5	67.0
Lime	3.5	5.5
Magnesia	11.5	2.0
Potash	30.0	13.0
Soda	2.0	4.8
Chlorides of potassium and soda }	—	—

100 0 100.0

"If we suppose the crop of bulbs of the turnips to weigh 20 tons per acre and the tops 6 tons, and take the average percentage of ash in the bulbs at .70, and that in the tops at 1.7, we remove from each acre, in round numbers—

	lbs.	
In the bulbs	314	mineral matter.
In the tops	228	"
	542	

An average crop of turnips in fact removes from the soil 28½ lbs. of phosphoric acid in the bulbs and 11½ lbs. in the tops—39½ lbs., or, in round numbers, 40 lbs. in all.

"The grain of wheat, on an average, contains 1.7 per cent. of ash, and wheat straw 5 per cent. The mean produce of wheat per acre, taken at 4 quarters—32 bushels at 60 lbs. the bushel, is 1,920 lbs. of wheat; and as straw, being generally twice the weight of grain, would weigh 3,840 lbs.,

	lbs.	
In 1,920 of wheat there are	32½	mineral matter.
In 3,840 of straw there are	192	"
Total mineral matter per acre	223½	

A fair average crop of wheat indeed removes from the soil 16½ lbs. of phosphoric acid in the grain, and 9½ lbs. in the straw—together 25½ lbs., or, in round numbers, 26 lbs. Therefore a turnip crop weighing 20 tons per acre takes 14 lbs. more phosphoric acid out of the soil than 32 bushels of wheat and the straw belonging to it."

Next let us travel with the Professor, while he farther inquires on the important question, for although the amount of phosphate of lime in the turnip crop is considerably more than in that of wheat, yet there are other reasons why the application of soluble phosphate of lime is so much more beneficial to the root than to the cereal. Here, again, to use the words of the Professor: "If we suppose the turnips to have been grown with 3 cwt of superphosphate, containing 20 per cent. of soluble, and an inappreciable amount of available insoluble phosphate; the manure will supply 31 lbs. of phosphoric acid and the remaining 9 lbs. must be derived from the soil. Yet although the larger amount of phosphoric acid contained in a crop of turnips accounts to some extent for this crop being more benefited by phosphatic manures than wheat, I believe the principal cause of the more energetic and striking effect which such manures produce on root crops than on cereals, will be found in the different mode in which green and white crops take up food from the soil, and the different duration of their period of growth. The roots of wheat, as is well known, penetrate the soil to a much greater depth than the more delicate feeding fibres of the roots of a turnip. Wheat, remaining on the ground two or three months longer than turnips, can avail itself of a longer period of the resources of the soil; therefore in most cases the phosphoric acid disseminated through the soil is amply sufficient to meet the requirements of the wheat crop; whilst turnips, depending on a thinner depth of soil during their shorter period of growth, cannot assimilate sufficient phosphoric acid to come to perfection. This is, I believe the main reason why the direct supply of readily-available phosphate is so beneficial to root crops, and not to wheat.

"This view of the matter, if I am not mistaken, gains strength by the fact that barley, a crop which in many parts of England is often sown late in the season, and generally later than any other white crop, is much more improved by the superphosphate of lime than oats or wheat. On late sown barley this fertilizer has a strikingly beneficial effect. When the land has not been well done before, or is naturally poor, and the barley backward, a top dressing of 3 cwt. of superphosphate will be found most useful. In that case a still better manure will be a mixture of superphosphate and guano in equal proportion, applied at the rate of 3 to 4 cwt. as a top-dressing. A crop of barley does not contain more phosphoric acid than a wheat crop; and yet I have repeatedly noticed the

effects produced on it by the application to the preceding crop of 3 to 4 cwts. of superphosphate made entirely from mineral phosphates, and containing no ammonia whatever. Although the superphosphate was applied to the preceding root-crop, and no other manure with it, and the turnips were carried off by the land, it nevertheless produced on the succeeding barley an effect as plainly visible as is the case when barley is top-dressed with nitrate of soda, or sulphate of ammonia."

I have on several previous occasions advocated the employment of the water drill for roots, and it is highly satisfactory to find its employment steadily increasing. It certainly economizes the use of superphosphate: it accelerates its action upon the young plant. Again let us hear the Professor on this branch of our important inquiry (and the reader will do well to read over and over the paper from which I have here taken so much). It is when applying himself to the scientific explanation of the action of superphosphate as a manure that he remarks that "the whole secret of the energetic action of superphosphate thus depends upon the production of most minutely subdivided or precipitated insoluble phosphates within the soil itself, not, as is erroneously supposed, on the direct absorption of soluble phosphates by plants; and it is not desirable to effect the precipitation before the manure is put on the land, for by so doing we should lose all the advantages resulting from equal distribution of the phosphates and their incorporation with the soil."

"The more rapidly the soluble phosphates in superphosphates are precipitated or rendered insoluble in the soil, and the more uniformly these highly-divided insoluble phosphates are distributed in that portion of the surface soil which is just under the young turnip plant, the more energetic their effects. Superphosphate acts a great deal more energetically when applied with the liquid than with the dry drill; to practical men, 2 cwts. of superphosphate applied with water, frequently produce as good an effect as 3 or 4 cwts. in a dry state."

"A little consideration will explain this difference. In the first place, superphosphate, in the shape of powder, cannot be so uniformly distributed on the land as it can in a liquid condition. In the next place, the acid or soluble phosphate may, and often does, remain unchanged in the soil for a long time, when superphosphate is applied in a dry state, and no rain falls for some time, or the manure is badly prepared. In dry weather the soluble phosphate remains as such where it has been deposited; when rain falls, as is frequently the case, in insufficient quantity to dissolve the soluble phosphate and to produce at once a dilute solution, a proper distribution in the soil is not effected. In other words there will be too much phosphate in one place, and none in another; and, besides this, more or less acid phosphate will be left that cannot exert any beneficial

effect on the young turnips. I have frequently picked up on fields bits of superphosphate, a month or six weeks after its application, and found in them still a considerable portion of acid or soluble phosphate of lime, notwithstanding that some rain had fallen during that time. There cannot, therefore, be much doubt that in superphosphate applied in a dry state, frequently a large proportion of the phosphates remain inactive in the soil, just at the period when phosphates are most needed by the young plants."

It will be well if the young farmer studies again and again facts like these. The different results produced by the use of fresh and fermented bones, is by no means an exhausted question, and the comparative value of dissolved bones, and the dissolved coprolite, or the mineral phosphate of lime, has been as little investigated, from the preference shown by the farmers of many districts to the dissolved bones (a fact which I learn from the London Manure Company). I am inclined to think that we might with advantage examine the question far more closely than has hitherto been done. And I am not disposed to regard the present chemical explanation of the action of superphosphate of lime, as one that appears satisfactory. We see, then, that there are still to be examined very important practical questions—inquiries that will long employ the chemical philosopher in his laboratory, and the enlightened agriculturist in far more difficult explorations on our hill-sides, amid many and ever varying disturbing influences.

BY-LAWS OF THE AGRICULTURAL ASSOCIATION.

In accordance with a resolution of the Agricultural Association, passed at the Annual Meeting at Toronto, in September last, we publish for the consideration of the Directors of the County Agricultural Societies, the following draft of a code of Rules and Regulations for the government of the Association, submitted by the Board of Agriculture for the consideration of the Delegates at the last Annual Meeting, and by them referred to the Annual Meeting of 1863:

RULES AND REGULATIONS

Of the Agricultural Association of Upper Canada, under authority of the Statute 20 Vic., cap. 32, sec. 33.

Whereas by the Act of the Legislature of Canada, 20 Vic., cap. 32, sec. 33, it is enacted, that "The Directors of the Agricultural Association shall hold a meeting during the week of the Exhibition, and may make Rules and Regulations for the management of said Exhibition;" and whereas, by section 34 of the said Act, a Corporation is established, entitled, "The Council of the Association," with full power to

act for and on behalf of the Association, between the Annual Meetings thereof; and as it is expedient that Rules and Regulations for the management of the affairs of the Association be adopted; Be it therefore enacted:

1. The Council of the Association, of whom for this purpose three shall form a quorum, shall, during the Exhibition, hold daily meetings, and in the absence of the President and Vice-Presidents, a Chairman *pro tem.* may be appointed, and all questions of importance requiring immediate adjudication shall be decided by said Council, and such decision shall be final.

2. The Council of the Association shall attend at an early period in each summer, and at successive times, as may be necessary, with the Secretaries and Treasurer of the Association, at the place appointed for the next Exhibition, and may appoint a Local Committee (if such appointment has not been previously made), and shall make all such preliminary arrangements as may be deemed requisite for the ensuing Exhibition; determining when necessary the plans, dimensions, and capacity of the buildings, offices and fixtures, suitable for the proper accommodation of the Exhibition, and every thing relating thereto. And in case of anything occurring to prevent the Exhibition being held at the place appointed by the Annual Meeting, such as the failure of the local authorities to provide the necessary buildings, or such like cause, then the Council shall have full power to determine where the Exhibition shall be held for that year, and shall give the earliest possible notice of such change.

3. All contracts, and all lawful proceedings, by, with or concerning the Association, shall be made and had with the Council of the same, and no other contracts, agreements, actions or proceedings shall bind or affect the Association.

4. The Secretaries of the Association shall keep proper records of all transactions and proceedings at the Annual Meeting and Exhibition, and also of the Council of the Association from time to time; and shall, under the direction of the Council, prepare and publish in due time, a Premium List for the Annual Exhibition, with such regulations and information for the guidance of the public as may from time to time be adopted. All entries in the Departments of Agriculture and Horticulture shall be made with the Secretary of the Board of Agriculture; and all entries in the Department of Arts and Manufactures shall be made with the Secretary of the Board of Arts and Manufactures; and they shall prepare suitable books, and insert therein all articles entered for exhibition in their respective Departments, and under their appropriate classes; and shall make whatever other arrangements may be necessary to secure the fair and impartial exhibition of every article; and, if deemed expedient by the Council, shall prepare and publish, previous to the Exhibition, a Catalogue of all articles entered.

5. The Council shall use great care and adopt such measures as may seem best calculated to obtain the services of competent and disinterested Judges; and to secure these essential ends

shall have full power at any period of the Exhibition to change or annul any appointment made.

6. The Judges shall, in the execution of their duties, be careful to act with the most rigid impartiality; shall make their entries in a clear and conspicuous manner, in all cases of doubt or difficulty referring freely to the Secretary, to any member of the Council, or to the Superintendent; and when they have completed their reports, shall sign and deliver their Books to the Secretary of the Department to which they belong, who shall cause the awards made by the Judges, to be transferred to Ledgers prepared for the purpose; giving parties entitled to the premiums orders upon the Treasurer for the payment thereof.

7. At the Annual Meeting, which shall be held at 10 A.M., on Friday of the week of Exhibition, the Directors shall decide the place of holding the next Exhibition; such decision, however, shall be in accordance with the provision of the Rule adopted at the Annual Meeting of the year, 1858.

8. The Treasurer shall take charge of and duly account for all moneys advanced by the Government for the benefit of Agriculture, all subscriptions and donations made to the Association by Counties, Townships, Cities, Towns, or Societies; all funds arising from the sale of Members' Badges or Tickets, and for entrance at the gates, and otherwise, entering the same under their respective heads in his general account; shall pay all accounts and expenses under instructions of the Council. The payment of premiums; and of all authorized contingent expenses of the Exhibition, shall be made so far as practicable on the spot where the same is held.

9. The Treasurer and Secretaries, under approval of the Council, shall employ a proper number of experienced assistants in their several offices, so as to secure the most prompt and perfect despatch of business; and, with due regard to economy, there shall be employed such a number of constables and ticket receivers as shall be necessary for the best accommodation of the public, and for keeping order and protecting the articles in every department of the Exhibition.

10. The Treasurer shall make up and close the accounts of the Association, upon the 31st December of each year, attaching thereto a list of all claims unpaid; and the Council shall direct the same to be audited and published. All balances of cash and all other moneys received on behalf of the Association, shall be placed to the credit of the same in such Bank as the Council may from time to time direct.

11. All stores and properties, of whatever kind, belonging to the Association and used for exhibition purposes, shall be in charge of the Treasurer; and he shall have the same properly protected and cared for from year to year, and shall have such as may be required conveyed to the place where the Exhibition shall be held.

12. The Local Committee may appoint a Chairman, and such Sub-Committees as may be

deemed necessary, and shall assist the Council of the Association in everything concerning which their assistance may be necessary in relation to the Annual Exhibition.

13. The Council of the Association may appoint General Superintendents of the several Departments, and also, so far as necessary, competent persons may be placed in charge of each class, who shall see that every possible facility is afforded to the Judges in the examination of the same.

14. A sufficient number of Refreshment Booths may be leased under direction of the Council, within the Exhibition grounds, and shall be so constructed as to afford suitable accommodation to the public, and so as to secure the due maintenance of sobriety and good order; and any infringement of this regulation shall subject the offender to a forfeiture of his lease and the consideration paid therefor, and the Booth may be immediately closed by order of the President of the Association.

15. The Members of the Agricultural and Horticultural Societies of the cities, towns and townships, and the Members of the Electoral Division Societies within the Electoral Division in which the Exhibition may be held, or immediately contiguous thereto, shall be Members of the Association and shall have free entrance to the Exhibition for that year; provided that the said Societies shall devote their whole funds for the year, including the government grant, in aid of the Association; provided also that the sum paid shall not be less than one dollar for each Member of the said Societies.

16. Upon the discovery of any fraud, deception, or dishonest practice, either in the preparation, ownership, or of any representation concerning any article exhibited, which may have affected, or have been intended to affect, the decision of the Judges, the Council shall have power to withhold the payment of any prize awarded, and may prohibit any such party or parties from exhibiting in any class for one or more years, and may also publish the names of such, or not, as may be deemed most expedient.

17. No Member of the Council or of the Local Committee shall be concerned in any contract or work of profit, directly or indirectly, ordered to be performed for the use of the Association, either as principal or surety.

18. These Rules may be altered or amended at any annual meeting of the Association; notice of the intended alteration or amendment being published in the *Agriculturist*, and in the *Journal of the Board of Arts and Manufactures*, for three months prior to the day of the Annual Meeting, when the same shall be decided by a vote of two-thirds of the Directors present.

WOOL GROWING.

The care of sheep, and the condition and quality of the food upon which they subsist, whether in barn or pasture, has a great influence upon the quality of the wool, and its value for manufacturing purposes. Sudden and unfavorable changes in the pasture and

food, whether the effect is to fatten the sheep or make them poorer, will affect the quality of the wool for good or evil. There are two immediate changes in the fibre at such times. One is making a joint where the new growth commences, which often separate in carding on account of its brittleness, thereby shortening the wool, which is often very injurious to the kind of goods in which the wool is being worked; and the other is in the change of the oily or fluid substances, within and without the tube of the fibre, and which, to a certain extent, govern the softness of the fibre and its adaptability to receive color.

Wool taken from a sheep which has died from exposure to cold and change, or which has been for a long time diseased, is always found very hard to take a good color. This is in consequence of the coagulated character of the oily substances of the tube of the wool, which become very hard to remove under such circumstances, and will resist the dye.

Where changes take place in the pasture, which are very striking, the joints before mentioned are not often produced as often as such changes are made, but the substances pervading the interior of the tube will be found to be different between each joint thus made, and will require different solving powers before they will take the color uniformly through the whole length of the fibre. This effect has been demonstrated the past year very fully in indigo colors, and has worked great damage; at first attributed to the indigo, but subsequently found to be in the wool.

The theory of the influence of climate upon sheep, as well as pasturage and feed upon their wool, is by no means new; though some of your correspondents seem to ridicule the idea. Such persons must be sadly ignorant of the *sheep literature* of the past, as well as of practical manufacturing of the present day, or they would not treat an idea of such importance lightly. The first requisite of wool is fineness, which is produced under and governed by all the laws of stock raising, such as good blood or breed, to start with, and feed, pasturage, climate and careful keeping.

The second is softness, which is almost entirely governed by the character of feed, pasturage, and care, which will fix the character of the "yolk" or oily matter which surrounds and penetrates the tube of the fibre. This substance coagulates and crystalizes around and within the fibre in clearing, and renders it harsh and brittle, or soft and silky, according to the influences which have governed its growth.

The third is the length of the fibre, which is not of so much consequence when its real length can be estimated by the manufacturer. But for ages it has been well known that the change of climate and condition of the sheep

has effected and almost governed the length of wool.

Wool comes to us in various states, each country gives it a certain character for our market, all affected by locality as well as by the different breeds of sheep from which the wool is taken. Australian wool is divided into several varieties. German wool is the finest usually used for broadcloths, in connection with the Australian and Cape wool. The great magnitude of the worsted trade is of comparative late interest, though very ancient in its introduction, and uses long wool. Spain, Portugal, Denmark, Sweden, Prussia, and in fact all Europe, have changed the whole character of their wool, by changes of breed, climate and keeping, and it only remains for America to do what she can do, to produce as good wool and as much of it as any country on the face of the globe. What, in fact, may not Massachusetts do? She can raise the wool for her whole manufactures. She can raise flax as a partial substitute for cotton; and when she does this, she will find her home product more valuable to her from the fact that the capital thus saved will fill up a gap now open, and growing wider and deeper, dangerously so, by importations from other States of products she might do without, and which carry off her silver and gold, as well as much of her best energies, without a proper return.—*N. E. Farmer.*

WOOL GROWERS' CONVENTION.

A convention of wool growers was held at Cleveland, Ohio, the other day, and was very largely attended. The principal topic discussed was whether shearing should be done before or after washing. After a careful consideration of the question, it was resolved that the practice of washing sheep be abolished, because:

1st. It permits of early shearing, which secures a greater quantity of wool, a longer staple, and a better condition of sheep and ewes, through the year.

2d. Of the exposure to contagious diseases, such as scab, foot-root, &c., in places frequented by different flocks to be washed.

3d. It is an expensive, unpleasant job, and unhealthy both for man and sheep.

4th. That the manufacturer must cleanse the wool at all events, and he can do it cheaper than the grower.

5th. That it is to the interest of the wool growers to put their unwashed wool in as good condition as possible, by keeping their yards well littered, and by throwing away all filth than can be separated from the wool.

6th. Some lots of wool are more gross and gummy than others, therefore no rate of deduction could be agreed upon, suitable to all grades and classes, but that each lot should be bought upon its own merits for quality and condition.

7th. As generally practiced, washing is little or no improvement to the fleece.—[*Ex.*]

A NEW FLAX DRESSING MACHINE.

Is there is any man who believes that the days of invention are past, he could have this belief shaken in no better and more effective way than by thoroughly examining the new flax dressing machine, which has been patented by Messrs. Mallory & Sandford, and which may be seen at their office, corner of White and Centre streets. This flax breaking and dressing machine is, as an improvement, of inestimable value to flax growing farmers. It consists of two fluted rollers through which the straw passes, being completely broken in its passage, and entirely divested of all refuse. This is done in such a manner that the use of the scutching mill to free the lint of woody particles, is rendered almost unnecessary.

This machine, which may be classed among the scientific curiosities of the day, occupies scarcely as much room as the bellows in a blacksmith's shop. It is made of four different sizes, the first weighing twenty-five pounds, and capable of dressing three hundred pounds of straw in ten hours; the second measures two feet by two feet, capable of dressing six hundred pounds per day; the third is three feet by three feet, and can dress one thousand five hundred pounds per day, requiring less than one horse power; and the fourth is four feet by four feet, which will dress two thousand five hundred pounds per day requiring less than two horse power.

This machine makes one ton of fibre out of every four tons of straw, and so separates and mauls the flax that it is not required to run the straw through the rollers more than once.

Unrotted flax passed through this machine is excellent stock for the manufacture of paper. At Dayton, Ohio, four dressers are at work making stock for the paper manufacturer, at a mere cost of \$10 per ton of lint.

It is estimated that this machine can prepare the flax for the paper manufacturer at a cost of two and a half cents per pound; a price less than that paid for rags before the rebellion began.

The portability and the great expedition of this new dresser in preparing flax for the manufacturer are entitled to the highest consideration by all who are interested in the cultivation of flax.—*N. Y. Com. Advertiser.*

NANKIN SHEEP.

I have recently noticed a request in your paper by J. B. S. of Montpelier, Vt., for information respecting "Chinese Sheep," their weight, quality of mutton, hardness as compared with other breeds, their wool, the number of lambs at birth, &c. As I first introduced the Nankin sheep into this country

perhaps a few remarks about them may be interesting to sheep and wool-growers.

I shall go back to the commencement, when I only had three sheep of this breed, and none other of any kind. They had then just arrived from Nankin, China. These three were all ewes from which I had in twenty months, a clear increase of more than 70, and raised them. I am aware that this statement will not be generally credited, and I will endeavor to make it plainer by further explanation.

These three ewes were all large with lamb when I took them from the ship, and in a month or less each one had three lambs, making twelve old and young. Then, as I had no buck at first, I was compelled to wait four and a half months for a young buck; and in nine months both old and young were coming in—the old ewes the second time—the young ewes with three lambs each, and of the old sheep, one had three lambs, one four, and the other had five lambs—the latter sheep raising the whole five, and grew to be large sheep, breeding twice a year. At this rate, it will not be difficult to understand how I raised 70 sheep in twenty months. If we had taken the proper care of them, 80 or 90 might have been raised in that time, as quite a number died from the want of care, having no suitable stables, nor were they separated as they ought to have been.

I then sold the whole flock to R. L. Pell, Esq., of Esopus, Ulster county, N. Y., except one ewe, and from it I have since raised a large flock.

The live weight of bucks is from 175 to 200 lbs, and the ewes proportionately heavy.—The quality of the mutton is the finest I ever saw, being entirely free from the strong taste common with other breeds of sheep. The wool is coarse and long. They are easy keepers, and do not jump fences—a low stone wall is sufficient to turn them. They are quite hardy, and stand our northern winters equal to any sheep I ever saw. Their great recommendation lies in the quality and quantity of mutton that can be produced in a short time. I have also made some valuable experiments by crossing Nankin with other breeds, which I will give you if desired.—*Theodore Smith in Country Gentleman.*

EXHIBITIONS TO TAKE PLACE THIS AUTUMN.

PROVINCIAL AND STATE:

Upper Canada, at Kingston, September 21 to 25.

Lower Canada, at Montreal, September 15 to 18.

New York, at Utica, September 15 to 18.
Ohio, at September 15 to 18.

COUNTY AND TOWNSHIP:

Lenark County, at Almonte, September 15.

Wentworth and Hamilton, at Hamilton October 14 and 15.

Toronto and West Riding York, at Toronto, October 6, 7 and 8.

Durham West, at Newcastle, October 8 and 9.

[Officers of Agricultural Societies will oblige by informing us of the days in which their shows are to take place.]

The Dairy.

HOW TO MAKE CHEESE.

BY ANSON BARTLETT, GEAUGA CO., OHIO.

The interests of the dairy are those of a large majority of the farmers in Northeastern Ohio, and still our agricultural periodicals are comparatively silent on the subject of dairying. Now, I am aware that no party is so much to be blamed for this silence as the dairy farmers themselves; for who are so well qualified to speak, write, and give information as those who are practically engaged in the business? As no article can be published in an agricultural journal without first having been written by some person, and as the editors of such papers are not generally acquainted with the practical details of the dairy, I see no other way by which we can secure the publication of articles interesting to dairy farmers, unless dairy farmers themselves will write such articles, and send them for publication.

Cheese-making, like every other branch of manufacture, requires skill; and I claim that no persons can succeed in making a superior article of cheese, unless they devote their whole time and attention to the business—it being one of the nicest chemical, as well as a very nice mechanical process, it follows, as a matter of course, that any mistake, or anything wrong, however small it may be, in itself, is sufficient to injure the product, and lessen its value.

The almost universal practice of dairymen is, to allow as little time as possible for making their cheese, hurrying through with it so as to be about something else; and the only question they stop to ask is: "Will it sell?" With this answered in the affirmative, they are content, caring little whether it is good, bad or indifferent. When I think how many there are in Northeastern Ohio, who will persist, year after year, in taking good wholesome milk, (for mind you, the cows don't give sour or stinking milk,) and work it up, or allowing it to work itself up, into such hard, dry, sour and stinking stuff, as they do, I feel vexed. And then to have them pretend that such garbage is fit for human beings, when a great deal of it is already half decomposed and rotten, or is so dry and hard as to be almost indigestible, is absurd.

Although I have long held the foregoing opinion of the importance of skill, care, and

the necessity of taking time in the manufacture of cheese, I was never so forcibly impressed with them, as during a visit which I made among the fine dairies of New York, located in Oneida and Herkimer counties.

The first of these dairies which I visited was that belonging to Mr. JOHN O. FRAZEE, two miles north of the village of Rome, Oneida county, where the milk from 400 cows was made into cheese; and where I saw that every cheese in his cheese-house was as *perfect in form* as when taken from the press, and still soft as butter, and every one who is posted must see at once that such cheese must be *firm, mild and rich*—the three essential points of a superior cheese.

I next visited the dairy of Mr. JESSE WILLIAMS, four miles from Rome, where the milk from four hundred and fifty cows was manufactured into cheese. Here the same perfection of form appeared as at Mr. FRAZEE'S; and after a critical examination of six or seven hundred cheeses, weighing one hundred and fifty pounds each, I failed to detect any, *even the least*, change of form in any of them, from what they possessed when taken from the press, and still they were *perfectly soft and buttery*.

I have at one time and another, visited over one hundred of the best dairies in Northeastern Ohio, as well as a large number in Eastern and Western New York and Western Vermont, but I never at any time, or in any place before, have seen a dairy of cheese so near what I considered perfect, as those of Mr. WILLIAMS and FRAZEE; but when I show how perfectly every step of the process of manufacture is reduced to a system, all wonder at the uniformity of the product will cease.

The cows are owned by different individuals, living at various distances from the dairy house; some of them are even four or five miles away; the owners draw the milk as soon as it is taken from the cows, directly to the dairy, where it is accurately measured, and an exact account kept, and the dairymen take it when it is thus delivered to them, manufacture it into cheese, keep it, and take care of it until sold. They then sell it, and after deducting the cost of salt, capping, rennet and anatto used in the manufacture, pay over to each farmer who furnishes milk, his pro rata share of the proceeds, except one per cent. per pound on the sale weight of the cheese, which, and the whey is the pay of the dairyman for all his labor, care, use of buildings, fixtures, &c.

EVENING WORK.—As soon as the milk is delivered and put into the vats at night, they add one gallon of cold water for every ten of milk, which they will have in the vat when it is all in, and immediately set cold spring water to running around the milk vat, and reduce the temperature as quickly as possible to sixty degrees, when it is left for the night with the water still running around the vat, in order to

still further reduce the temperature, and keep it cool through the night, and prevent souring.

MORNING WORK.—In the morning the milk is put in with the last night's milk, as soon as delivered, and when all is in, the heat is raised to eighty-two degrees in warm weather, and eighty-four in cool, and sufficient rennet added to produce perfect conglutination in one hour and fifteen minutes.

THE CREAM.—Before heating to put in the rennet, the cream which has risen on the last night's milk is dipped off and poured back through a cloth strainer, until it has become thoroughly incorporated with the mass of the milk; and after the rennet is added, the milk is kept frequently stirred, dipping off the top and pouring through the strainer until the milk begins to thicken. This is to keep the cream from rising. When allowed to remain quiet, even for a few moments, the cream separates, and rises to the top; and if the curd begins to form with the cream floating on top, it will work off in the whey; but if kept thoroughly mixed and incorporated with the milk until the milk thickens and the curd begins to form, it is not very difficult to keep it in the cheese, and not lose it in the whey. One great object in adding the water to the milk, is to reduce the milk so as to have the cream work in the more readily.

THE CURD.—When the curd is sufficiently formed to go to work at—which may be known by its breaking with a clean, smooth fracture, in passing the fingers' through it—break it up carefully with some instrument, so as to leave it in lumps about two inches square; but this instrument should have no sharp edges so as to cut, for—take very particular notice—*no cutting edge*, of any kind, must be allowed in the curd at any time during the process of manufacture. This is essential and important. The curd must be divided entirely by *breaking*, and not by cutting. As good a way as any is to use the hands for breaking the curd from the first. After breaking, as above described, so that the lumps will be about the size of an egg, let it stand about ten minutes, or until the curd begins to settle, and then begin to work and break the curd with the hands. Let the motion be very slow and careful, so as not to work the cream off, or whiten the whey; meantime, raise the heat to eighty-eight degrees; when the temperature arrives at eighty-eight, cut off the heat, let the curd settle, and draw off the whey until there is barely enough left to cover the curd.

PRESSING OUT THE WHEY.—Now comes the most difficult part of the process, that is, to break the curd thoroughly and finely, and at the same time preserve the green appearance of the whey. This is done by taking the curd between the hands in small quantities at a time, and bringing the hands flat and close together with a pretty strong pressure. Care must be taken, however, not to rub or mash

the curd so as to start the white whey. In fact I hardly think any written description of this part of the process will be intelligible, practical instruction being almost indispensable, but the result aimed at is to expel the whey from every particle of the curd, by thus pressing it between the hands, as well as to break up the curd.

COOKING THE CURD.—When you have completely broken up the curd, put on the heat; keep it stirred and broken until the temperature arrives at ninety-four, and then cut off the heat; keep the curd stirred with a lively motion fifteen minutes, and then draw off the whey again, leaving enough to cover and float the curd. Now go over the curd again, and break it up as before, getting fine and even as possible, and then put on the heat again and heat to one hundred degrees. This is the greatest heat. Meantime stir the curd with a brisk, lively motion, cut off the heat and keep stirring twenty minutes, and then cover the vat up with a blanket, and let it stand until the curd is thoroughly cooked, which will be about an hour or little longer. When the curd is completely cooked, which may be known by taking a small lump and pressing it firmly between the thumb and finger—if well cooked, on removing the pressure, the curd will spring out into its former position; or select the softest lump you can readily find, break it open, and if it appears dry inside, and free from whey, it may be considered done.

AFTER COOKING.—Now let off the hot water from the vat, and replace it with cold water; cool the curd and whey to eighty-eight degrees, and then dip the whole out into a draining sink, or a cloth strainer, keep it stirred so that it shall not pack together until thoroughly drained; and then add the salt and work it thoroughly.

SALTING AND PRESSING.—MR. WILLIAMS' rule for salting is two pounds and seven-tenths of a pound of salt to a cheese from one hundred gallons of milk—beer measure—and MR. FRAZEE's rule is two and five-eighths pounds of salt to one hundred pounds of pressed cheese.—Either rule will do well enough I think, although I prefer MR. WILLIAMS' rule. When the curd is salted, it is ready to be put into the press, and its subsequent treatment is much the same as is ordinarily pursued.

RENNET.—Nothing but the skins of the rennets are used; the curd, if there should be any, being thrown away. The way to preserve them is to use salt enough to do it, and then add a little more salt; stretch on a bow end, hang, up in a close, dry place. In preparing the rennet take a gallon of water at the temperature of ninety degrees, for each rennet used, put the skins into the water, and add more salt than will dissolve; let them soak two or three days, rubbing them occasionally; and then take out the skins and put them into another vessel, and add water and salt as be-

fore. Use of the first until that is gone, and by that time the other will be ready. A good rennet is sufficient to make from six to eight hundred pounds of cheese.

ANATTO.—When the rennet is put into the milk, add a small quantity of annatto, just sufficient to give the cheese a bright straw color, or the color of good butter. The best way to prepare the annatto for coloring the milk, is to boil it in strong lye; white-ley is best. The quantity to be used must be determined by experience, as no very accurate rule can be given.—*Ohio Cultivator.*

CHEESE MAKING.

The following is the statement of Mr. Hugh McMillan, of Erin Township, of the mode of manufacturing the cheese exhibited by him at the Provincial Exhibition of 1862, to which was awarded the second prize:

Size of farm 200 acres. Mixed husbandry. Number of cows, 10. Breed, Durham grades. Pasture, clover and timothy mixed. Was made about the 20th June. Night's milk is strained into pans, and left till morning, then the cream is skimmed off, and part of the milk put in a tin pail, putting the pail in a pot or kettle of boiling water, until it is sufficiently warm to raise the temperature of night and morning's milk to nearly that of new milk. If the cream is heated it has a tendency to be greasy on the top, if the milk is heated in a pot or kettle it is apt to give it an unpleasant flavour. Rennet is prepared by steeping one or more in water until the strength is obtained, and then straining off the liquor, use a sufficient quantity to digest in about an hour, then carefully break or mix the curd; then putting the strainer over it, it is allowed time to settle, then the whey is dipped as it rises, (we neither scald nor use colouring matter). When the whey is off cut the curd in slices which are piled in one side of the tub to drain. When it is drained it is broken with the knife, and half an ounce of common salt used to every pound of curd. It is then put in the hoop allowing it a short time to drain before putting it to press. It is pressed lightly for the first three hours, after which the pressure is increased to 16 or 20 cwt. It is changed two or three times a day till thoroughly pressed, after which it is taken to the cheese room, where it is bandaged and turned once a day.

Yours, &c.,

HUGH McMILLAN.

LEITH BUTTER REPORT, MAY 8, 1863.

For the Canadian Agriculturist.

The past month was one of great depression in the Butter Trade, and contrasts strongly with the same period last year.

Holders of Danish and German Butters finding they could never realize their consignments without a loss, were directed by the

Shippers to hold for higher prices than the dealers were disposed to pay; meanwhile, owing to the American war, supplies continued to flow in from the North Western States, on a scale quite unprecedented.

Last month the holders of Danish and German sorts became anxious sellers, and some large sales of these sorts were effected, from 4d to 5d, (equal to 9 and 10 cents per lb.,) and even at these low rates, a clearance of old has not been effected. These sales will entail a loss of from 43 to 47 per cent.

The weather on the continent of Europe having been very mild during winter and spring, the supply of new milk Dutch Butter has been abundant since the beginning of March, and prices have been very low.

Comparative value of	1858	1859	1860	1861	1862	1863
New Milk, Holland	—	—	—	—	—	—
Butter as on the	—	—	—	—	—	—
6th of May.....	11d	11½	11½	11d	11½	8d

Prices of cured butter generally decline after the end of May; they are, however, already so moderate as to leave less margin for a fall, and the demand being very good, I do not anticipate the decline will exceed ½d to ¾d per lb.; as with the advance of the season, the quality will improve and tend to support prices.

No new States or Canadian Butter has yet reached this country, neither is it likely much will arrive for a time; as during the Summer most of the butter arrives in this country in a heated state, it becomes a question whether it is advisable to run the risk of getting the butter oiled, or hold it over on your side, where it may get stale before being shipped in Autumn.

Holders of butter in Canada, should endeavour to keep their stores cool with ice during the heat of Summer; but the great point is early and perfect curing, and unless this is attended too, no after cure of the butter will protect it from rancidity.

There is a small work on Dairy Husbandry, by J. C. Morton, Editor of the Agricultural Gazette, London, published by Longmans of London, which it would be well for every Canadian farmer to possess; the cost is moderate, only 1s 6d Sterling, or 36 cents, and contains much valuable information.

Leith, Scotland.

MN.

Horticulture.

ON THE PEAR.

READ BEFORE THE TORONTO GARDENERS' IMPROVEMENT SOCIETY ON JUNE 15TH, BY MR. A. PONTÉY.

Mr. Chairman and Gentlemen,—The subject which it is proposed shall occupy our atten-

tion to-night is the culture of the Pear. I am sorry that instead of listening to some one or other of the many persons composing this society, who are more competent to deal with the matter than I am, that I have to give you my limited ideas and experience on what I consider, next to the apple, one of the most important of fruits.

I shall preface my remarks by saying that the subject of Horticulture, which by our meeting here to-night we are endeavouring to advance, is one which is becoming more and more popular every day, and the effects of which cannot but be refining and exalting to the human mind. There is scarcely a man, no matter what his circumstances are, but is desirous of in some degree embellishing his premises, be it a humble cottage or more stately mansion, with trees, and in this speculative and commercial age, he often wishes to combine the ornamental and useful, more especially the man of limited means, and it is on that account, namely, its adaptability to a small garden, that I shall speak of the pear principally as a dwarf, being in that shape more suited for a small garden than when grown as a standard.

In the first place, I may say, there are two ways in which pears or any other fruit may be propagated, namely, by seed, which is the natural way, and by dividing the plants by scions or buds, which is the artificial way,—and the only way by which the same variety can be produced with certainty.

I have mentioned the growing of fruit trees from seed, in order that I may call your attention to the fact that a great many of the maladies which the pear is subject to when grown as a standard, are attributable, I think, to the unhealthiness of the stock. No care is taken, as a general thing, by nurserymen to ascertain that the seed which they sow for stocks is produced by good, healthy, vigorous trees, or no heed is taken as to whether it is the product of sorts which are well adapted to this climate or not. Now, how can we have a healthy tree, when the stock through which it has to draw the greater portion of its nourishment, and with which it must become most intimately identified, is of a sickly character? The thing is so obvious, that it is only necessary for me to allude to it, to convince every one of the importance of bestowing more care and attention on that branch of pear culture.

Artificial propagation, with regard to the pear, may be divided into two ways, namely budding and grafting. The only stock which can be used to any advantage are the pear seedling, and the quince; although they will do on some others, for instance the thorn and mountain ash—but it is only on very light soils where the other stocks would not do, that the mountain ash is used. The seedling pear is the stock used when a standard tree is required, and the quince where it is wished to produce a dwarf tree.

The same care should be used in the selection of a quince for stocks, that I have pointed to in regard to the pear seedling. There are two or three kinds of quince grown, some of which, owing to their more vigorous growth, are much more to be desired than the others. In fact, now there is but one that meets with cultivation by experienced nurserymen, and that is a variety called the Angers.

It has been found that when pears are worked on the others, say the apple quince for instance, that they make a very poor union, and consequently the tree is often very short lived, frequently not living more than 5 or 6 years. This I believe is mainly owing to the slow and feeble growth of the apple quince, and has done more towards throwing dwarf pears into bad repute than any other one cause.

A strong loam, having a tendency to clay, with a clayey subsoil, is acknowledged to be the most suitable for the pear, both for giving fine fruit, and for preserving a healthy state of the tree for the longest time. This soil, and where it is attainable, a considerable proportion of lime in its composition, I believe is everywhere acknowledged to be the very best that can be desired, and, in short, the soil for the pear.

By a clayey soil I do not want to be understood to mean a soil that will retain wet too long, for no fruit tree can remain healthy long in a soil that retains water so as to become cold and sour. It ought to be so thoroughly worked up with the plough or spade, and so closely intersected with drains, that it will admit of being worked at once after a heavy fall of rain.

Before proceeding to speak of the best kind of manure to be used for the pear, I would call your attention to the shameful want of economy and good management as evinced by almost every one having anything to do with a garden, in the collecting and taking care of material for manure. It is well known that vegetable matter decomposed is the best fertilizer that can be applied to vegetable life, and yet we almost always find that when a garden is being cleaned up, either in the spring or fall, that the weeds and refuse matter, instead of being carefully preserved, are either burned, or, worse still, thrown out into the road or some out of the way place, never more to be thought of.

The greatest desideratum next to a good soil for the pear is a good manure, and unlike a great many other things, the manure which the pear, together with many other fruits, most revels in, is within the reach of every cultivator. Stable manure, or in other words, animal manure, is the best fertilizer that can be used for trees, as it contains not only some but all the ingredients which plants require for their nutrition and for the fullest development of all their parts. This manure, in order to be thoroughly effective, requires to go through a course of preparation, in order that it may be thoroughly assimilated with the soil, and that the roots of the trees may find

it in a condition suitable to be made use of by them.

If I was about to plant a pear orchard, one year before I intended doing so I should accumulate a sufficient quantity of stable manure, leached ashes, crushed bones, and charcoal to give the piece intended to be planted a thick coating, say 2 inches over the whole surface. I should turn it over two or three times in order that the different material might get thoroughly incorporated together, taking great care that if anything in the shape of liquid ran away from it to have it thrown back again from time to time, and the whole heap occasionally sprinkled with gypsum to fix the ammonia and thereby allow none of the more volatile but not the less valuable portion of the heap to escape before it was required by the trees. This I should spread thickly over the ground and plough in, taking care to have the furrows as narrow as possible to insure the more complete mixture of the manure with the soil. A portion of this compost I should mix with some virgin meadow loam, perhaps in the proportion of one half, and throw a few spades full of it around the roots of each tree after deposited in the hole prepared to receive it, and previous to any of the other soil being thrown in.

The trees, I mean dwarfs, should be planted from 8 to 10 feet apart each way, and for two or three years the intermediate spaces could be cropped with some vegetable crop, avoiding the plants which are allowed to mature their seeds, such as oats, wheat, &c., and preferring those which require cultivation with the hoe or cultivator, such as potatoes, cabbage, &c.

By this method not only does it give a source of profit to the planter, but it benefits the trees, — care should be taken though when ploughing not to go near enough to the trees to disturb the roots. A dwarf pear comes into full bearing the 2nd or 3rd year after planting, while the standard requires 10 or 12 years to come into anything like a good bearing condition, — by this you will see that the dwarf trees, suppose they only bear annually a small crop of fruit, will have yielded a valuable series of crops while the standards were coming into a bearing state.

Almost every kind of pear does well on the quince, but there *are* some slow growing kinds, of which I will give a list at the close, which do not, except by double working, which is by first working a vigorous growing kind upon the quince, and then the slow grower upon that.

The pruning of the tree comes next in course, and is by far the most important operation connected with pear growing on the quince.

It used to be considered in days gone by, that it was almost unnecessary to prune, that what was required in some of the moister, duller climates of Europe, in order to admit the sun and air sufficiently to the branches and fruit, was unnecessary to be done here in our brighter and clearer atmosphere; but a

more thorough knowledge of the subject has shown that idea to be erroneous, and a glance at an unpruned dwarf pear will at once convey to any intelligent mind the necessity of using the knife freely. Such a specimen would be found to be a perfect mass of leaves and wood at its extremities, and void of all spurs and branches in the interior of the tree, and the only well developed, properly flavoured and coloured fruit will be such as by their situation at the extremities of the branches have been enabled to receive the full influence of the sun.

Pruning, when properly performed, is intended to induce and counteract different forms of the tree; thus we prune to induce fruitfulness and to lessen it, we prune to throw more vigorous growth into a certain portion of the tree, and we prune to prevent a too full development of any particular branch or branches.

Pruning, when applied to a dwarf tree, should commence when the tree is one year from the bud, what is called in nursery parlance a maiden tree—which is simply a single long shoot, varying in length according to the strength and robustness of the kind. This at one year old should be cut down to within 4 or 5 good buds at the bottom, thus causing a growth in diameter so to speak—that is to grow branchy and stocky at the bottom, and thereby preventing the upper part from overbalancing by keeping the height of the tree subject to the increase of the diameter. For the same reason and on the same principle an equal growth of the branches is acquired by checking the growth of any particular branch whereon it is found to usurp more than its proper share of room in proportion to the others, and by so doing allowing the weaker branches to receive some of the extra nourishment it was absorbing.

Pruning generally should be performed before the sap has commenced to rise, say about March, or any time after the severe frosts are over, and before any warm weather has excited the tree. In this pruning an eye should be had to the general appearance of the tree, making it as bushy as possible at the bottom, and approaching in shape as nearly as is practicable to a pyramid. This style of tree, which is called the pyramidal, is acknowledged to be the best form for the dwarf pear, as every part of it then gets the fullest benefit of the sun, &c., there being no one part of it allowed to outgrow another, and thereby abstract the direct rays of the sun from falling on each part alike.

Summer pruning or pinching with the finger and thumb is found to be of great importance in pear culture, not only to regulate any inequality in the growth of a tree at the time it is making such growth, but to induce fruitfulness. When it is intended to have the latter effect, it should be performed at a later period of the

growth, than for the former, because if stopped too soon, instead of causing the buds left to throw out fruit spurs, they would most likely break and form shoots for wood again. Although the pyramidal is the shape in which the dwarf pear is generally grown, there are many others. In a recent number of the *Cottage Gardener*, I saw mention made of a French work, by a Mons. Du Breuil, in which the author goes at length into six different methods of training the pear; the only one which I recollect as being likely to come into use generally, is what he calls the Double Contra Espalier in Vertical Cordon. It is described as a double row of trees, six inches apart, planted zigzag, twelve inches from tree to tree. The trees are allowed to get nine feet high, cut short back to spurs, and not allowed to get more than one foot through in the branches. Posts are put in every twenty feet and connected together by fencing wire, this wire steadies a nine foot lath, to which each tree is fastened, making a perfect wall of foliage and fruit in the fall. The author claims that this method is twice as fruitful as the pyramid, and comes into bearing in half the time. It struck me it might be used in growing the pear alongside the walks of a garden, in the way that Espalier trees are now grown.

Pears which are sure to succeed well on Quince.

SUMMER.

Osband's Summer.	Dearborn's Seedling.
Tyson	Rostiser.
Beurre Giffard.	

AUTUMN.

Belle Lucrative.	Beurre Deil.
Urbaniste.	" Laugelieir.
Duchesse d'Angouleme.	White Doyenne
Howell.	Beurre Superfin.
Beurre d'Anjou.	Louise bonne de Jersey.

WINTER.

Easter Beurre.	Figue d'Alençon.
Glout Morceau.	Seckel.
Josephine de Malines.	Vicar of Winkfield.

FOR DOUBLE WORKING.

Maria Louisa.	Doyenne d'Ete.
Beurre d'Aremburg.	St. Michael Archange.
Ananas d'Ete.	

A great deal more might be said about the diseases which the pear is subject to, and some of the remedies used; also about its culture in orchard houses. Not having had any experience in that way, I hope that some one of our members will ere long give us an article on the culture of fruits in orchard houses, and make the pear a speciality, combining its diseases and orchard house culture in one article.

Before taking my seat, Mr. Chairman and Gentlemen, I have a few remarks to make in reference to our Society. The avowed purpose of our meeting is to enlighten each other as much as possible on the best methods of cultivating anything that comes within the sphere of any one of us. Now I think that object could

be better attained, or, in other words, I think more information could be elicited, if our discussions took more the shape of a debate; it might perhaps be the means of causing a greater interest to be taken in the meetings, and cause a more earnest spirit generally to pervade our ranks. What I mean is, that when any one has read an article, and in it has put forth anything that some other member does not quite agree with, if he would stand right up and point out those parts, and adduce his own reasons for differing, I think it would give more zest to our meetings, and that we should be mutually benefited thereby.

Then again, without wishing to interfere with any established rule of the Society, I would suggest that by having one person constantly in the chair, we lose to the Society the experience of one who, from his long and intimate connexion with Horticultural Societies, could give us much and varied valuable information.

HAMILTON HORTICULTURAL SOCIETY.

MR. EDITOR,—Monday, the 25th day of May last, the day set apart for the celebration of the Queen's birth day, a day which the loyal citizens of Hamilton highly appreciate and enjoy, as has been usual, the Horticultural Society held its first exhibition for the season in the Mechanics' Hall; the day was favourable, and the attendance in the afternoon and evening very good. The Spring Shows of this society have hitherto been considered amongst the foremost in the Province, if not the best. The latter, in the opinion of competent judges, far exceeded any of the former in a fine display of plants. The entries by the practical gardeners and amateurs were more in numbers than on any former occasion at this time of the season. The quality of the stove and greenhouse plants were good, and showed a considerable improvement in their formation and growth. The display of foliage, greenhouse, and stove plants from the gardens of W. P. McLaren and John Brown, Esqs., was excellent; also the geraniums, fuchsias, and greenhouse plants from the gardens of I. Buchanan, John Young, and R. Juson, Esqs. The amateurs came out very well and produced some very good specimens. We wish much more to be done on their parts, and long to see the exertions made by the many that are now confined to the few. The vegetable and fruit department was, for this time of the year, well represented. The collection of apples may be said to be the largest and best we have seen for a long time at a May Show. The grapes from the orchard houses of W. P. McLaren, Esq., deserved the very highest commendation. His pot strawberries were also good.

Mr. Fleming, from Toronto, exhibited a collection of cut blooms of Pe'argonium, geraniums. The plants Mr. Fleming has lately im-

ported; the flowers were very fine and much admired.

I shall not trouble you with the whole prize list, only the leading things, as follows:—

Best Achimenes, in pots, Thomas Buchanan, gardener to W. P. McLaren, Esq. Best Balsams, W. W. Chapman, gardener to I. Buchanan, Esq., Auchmar House, Clairmont Park. Best Calceolarias, in pots, Wm. Hill, gardener to John Brown, Esq.; 2nd prize, R. Murray, gardener to John Young, Esq.; 3rd do., Hugh Shaw, gardener to R. Juson, Esq. Best specimen Calceolaria, Wm. Hill. Best Cinerarias, Thos. Buchanan. Best Carnation, in pots, Wm. Chapman. Best four Fuchsias, R. Murray, (varieties—Lord Clyde, Guiding Star, Rose of Castille, Bank's Glory); 2nd prize, Hugh Shaw, varieties—Venus de Medici, Souvenir de Chiswick, British Sailor, Ariel. Best three double Fuchsias, Hugh Shaw, (varieties—Sir Colin Campbell, Madam Cornelson, Leoline; best specimen dark, R. Murray; best light, do. do.; 2nd do. dark, R. Murray; 2nd do. light, H. Shaw. Society's prize for the best six foliage plants, Wm. Hill, (varieties—Caladium Chantini, Caladium Whytii, Pavetta Borbonica, Farfugium Grande, Dracena terminalis, Colens Verchaffelta, a new plant; 2nd do., Thomas Buchanan, (varieties—Caladium Chantini, Colens bloomii, Cissis discolor, Maranta Zebrina, Maranta Regalis, Solanum Cutea. *Special*—Best six, Thos. Buchanan, (varieties—Calladium Bellumii, Cynophyllum magnificum, Maranta Regalis, Maranta Zebrina, Caladium Chantini, Campylobotrys regalis; contested by Wm. Hill with Cissis discolor, Croton tricolor, Maranta Zebrina, Calladium Whytii, Cynophyllum magnificum. Best 12 green-house plants, Wm. Hill, (varieties—Combretum purpureum, Pentes Carne, Leche-naulia formosa, Ixora coccinia, Stephanotis floribunda, Calceolaria rugosa, Hydrangea Hortensis, Cuphea Platycentra, Euphorbia splendens, Centradenia floribunda); 2nd do. R. Murray, (varieties—Cytisus racemosus, Euphorbia Splendens, Santana delicata, Santana Rosea, Calceolaria rugosa, Calceolaria Sulphurea, Cuphea Platycentra, Solea Concolor, Polygala dalmatina, Russalia floribunda, Hydrangea, Hortensis, Metrosideros floribundus, Orchidens; W. Hill, (varieties—Epidendrum Cauliflorum, Oncidium Flexuosum, Oncidium Papilia, Gongora atropurpurea. *Special* prize for green-house plants was taken by Thomas Buchanan, (varieties—Stephanotis Floribunda, Hoya Carnosa, Hoya Bella, Cyetserius Reflexum, Hydrangea Hortensis, Vinea Rosea, Vinea Alba, Erica Ventricosa Rubra, Calceolaria D. O'Connell, Azalea Chalsonii, Azalea Grenvillii, Aralea Gem.) Best four P. Geraniums, Thos. Buchanan, (varieties—Brunetta, Topings, Elegans, Butterfly, Sir Henry Smith; 2nd do. R. Murray, (varieties—Elegans, Arnold's Virgin Queen, Reine Debal, Alexandrina. *Special* prize in this class taken by Thos. Buchanan,

with varieties—Bride, Miss Foster, Mrs. White, Arnold's Virgin Queen, Comtesse Bresson, Princess Matilda. Best specimens by Thos. Buchanan and W. Chapman. Best four fancy Geraniums, Hugh Shaw, (varieties—Evening Star, Acma, Queen of the Valley, Mrs. Allan); 2nd do., R. Murray, (varieties—Itloniskii, Louisa de Bellmont, John's Improved, Mrs. Allan. Special prize in this class, Thos. Buchanan, with Acma, Formosum Negro, Mrs. Black, Modestium, Calaban. Best four Scarlet Geraniums, Wm. Chapman. Best specimen, Wm. Chapman; 2nd do., R. Murray. Extra to Wm. Chapman for a pyramidal oak-leaved Geranium. The plant small, but in good taste. Best Pot Roses, R. Murray. Best hardy Shrubs, John Freed. Best Tulips, Bruce and Murray.

The successful competitors in the amateur Floral department were George Carlyle, W. Michael, Thos. Smith, and John Weatherston. Ladies' department, Mrs. C. Lee.

Successful in the Fruit department, Wm. Chapman, Thos. Lottridge, Adolphus Case, John Stabins, Thos. Buchanan, and H. Colbeck, Esq.

The successful competitors in the Vegetable department were Wm. Jones, gardener to P. Grant, Esq., for the best Asparagus; Wm. Hill, for the best Early Cabbage; Hugh Shaw, for the best Seedling Onions; James Goy and S. Singfield, for Onions of 1862; Jas. Wilds, for Curled Parsley; Early Potatos, Wm. Hill and Singfield; Radishes, J. Wilds and T. Buchanan; Rhubarb, J. Wildes, J. Freed, and Wm. Harris; Sea Kale, W. Hill and Wm. Chapman. Mushrooms, T. C. Fearnside.

Amongst the extra prizes awarded was one to Anthony Copp, in this City, for a very handsome Aquarium, which attracted much attention; and one to John Weatherstone for a collection of Daisies. GEORGE LAING.
Hamilton, 2nd June, 1863.

THE CURCULIO.

The *Rhynchænus nenuphar*—"Plum Weevil." This is the renowned "Curculio," of which so much has been said, surmised, and written; whose fame is as illy deserved as that of many heroines embalmed in history. It belongs to the *Coleoptera* order—the large family of weevils—the second division, *Rhynchænus*. This family is divided into three great divisions, *Curculio Rhynchænus*, and *Callandra*, by Linnæus, with innumerable genera and sub-genera. This insect belongs to the genus *Conotrachelus*. It is a native of this country, and was first described by Herbert, in 1797. It has a number of synonyms. It is a small dark, rough beetle resembling a withered bud. When you touch it it draws up its legs, presses its long antennæ and snout close against its breast, and feigns death for any length of time.

When the mother beetle is prepared to deposit her eggs, she places herself on the plum, and with her strong proboscis cuts across the lower end, which is always softer than towards the stem. It has been for me many years of investigation whether she could do this: it was impossible, for the brittle muzzle must inevitably snap off at the head in the effort of cutting the skin of a fruit which I could with difficulty indent with the strong nail of my thumb. I could not relinquish my supposition that it was performed with some sharp instrument at the end of the abdomen. But time and perseverance convinced me of my error, and I was both delighted and amazed when I found how beautiful her means are adapted to the end she has in view. At the extremity of the proboscis are two small sharp teeth of horn. You perceive how elbowed the antennæ are, the long joints of which reach two small punctures near the eyes at the very top of the proboscis. When she is preparing to cut the skin the joints of the antennæ are placed in these sockets, which strengthen and guide the proboscis as its teeth force upon the skin, giving it the needful purchase. This accomplished, she turns round and widens it with two small plates at the end of the abdomen, and with their aid deposits a single egg, drawing the skin back over it, and the wound in a day or so is healed. A hole is made at the end of the cut to allow evaporation to take place around the egg, or the young worm would, when so very tender, be drowned or suffocated. This proboscis, when the insect is just dead, placed under a magnifier, shows one of the most marvelous complications of nerves, turning, twisting, and communicating with each other all the way up, until they are lost in three large main arteries which go through the whole body. As soon as the egg is hatched the worm works into the fruit, destroying it completely in time. It is a small white, footless grub, with a strong brown horny head. When ready to transform, the plum generally falls to the ground, and the worm issues from the same path it made and enters the earth, where it rolls itself into an oval, making a loose pupa-case, a few grains of sand adhering to the coarse thread or paste it places around the limbs. It is a singular chrysalis, imbedded in sand, on one side, resembling grains of mouldy rice on the bark. Then if she accomplished this her larva would starve as its jaws are feeble, scarcely able upper, and can easily be detected reposing as close as possible to the main roots of the plum tree. If you turn up the soil carefully a few inches, you can relieve the tree of hundreds of this fruit-destroyer.

Often the plum does not fall, and the worm comes from it on the tree. In wandering along it must assuredly meet with some of those black, grainy warts made on this tree by insects belonging to the *Hymenoptera* order, *Gallicolæ* family (gall insects.) Here it often

remains over the winter, curled up, not transforming to a chrysalis until the spring, if at all. I have often found these worms in these warts—a dozen and more in some; but never had them come to anything unless I shook them upon the earth, when they would burrow immediately, and in a day or so would be discovered in a chrysalis state. But to conclude, as some authors have done, that the weevil makes these warts is simply absurd. She has no saw, no instrument which can perforate to consume the soft pulp of the plum. If it were not for detaching the stone, and allowing the air to enter and penetrate the interior, the worm itself would do very little harm to the plum. It is the air admitted, causing the decay, and not that the worm consumes so much, that destroys the fruit. Many suppose that this insect cannot fly; but this is an error. Because they can perceive no joining of the wing-cases they conclude there is none. But they fly well; the under wings are full and strong. Like those of other beetles, these are beautifully marked on the edges with brown, while the wing covers are a light horny yellow on the lower portions. This is really all that can be said or written about this insect; and you can easily conceive yourself that it is all that is needed.

If you will examine the roots of a plum tree which has been infested, at the end of the season, you will see how utterly useless are washes, nets, etc., etc. Scrape the roots free of soil in the fall, before frost, throwing around them lime or ashes, and this insect will gradually disappear.—*Harper's Monthly.*

FRUIT GROWER'S ASSOCIATION OF U. C

EDITOR OF THE AGRICULTURIST,—DEAR SIR: Will you please notice in the July number of the *Agriculturist*, that the next regular meeting of the U. C. Fruit Growers' Association will be held in the "Agricultural Hall," in the City of Toronto, on Wednesday the 15th day of July, at 2 o'clock, p.m.

Your most obedient Servant,
D. W. BEADLE, Sec.

June 16th, 1863.

WHAT AILS MY GRAPE?

TO THE EDITOR OF THE AGRICULTURIST.—The following conversation will explain the occasion of the above enquiry, and perhaps account for it.

Mr. James. What ails my grapes! all my fine prospects of weighty Hamburgs, Chasselas's and Frontignans are no more.

Mr. Richard. Indeed, I am sorry to hear you say so, what is the matter?

Mr. J. The matter! I declare my discouragement is great. I begin to think that we cannot raise grapes in a cold grapery. I am disappointed.

Mr. R. And perhaps unreasonably so. Do you fancy that grape growing under glass is wholly exempt from partial failure and occasional disappointment, can you name the walk in life, the occupation or the scheme in which disappointment is not frequently met with? You cannot. And are you to doom the cold grapery, which has had splendid success, for years, in other cases, because through some negligence of yours you are this one season balked of a great crop? But tell me what is the matter, and perhaps I may be able to account for it.

Mr. J. The matter, I tell you I have lost my crop. Those fine stout canes, which were so well ripened, haven't a live bud for several feet. Only at the extremities are there a few. Now tell me why that is so.

Mr. R. Did you keep your cold grapery closed the whole winter?

Mr. J. I did so.

Mr. R. Now for your comfort, for the old saying is, that misery loves company, let me tell you that my grapes are just in as bad a condition, one in particular. I left it last fall, after pruning, about ten feet long. It was a thick well ripened cane. This spring the buds are all dead except for about two feet at the end farthest from the root. I account for it thus: During March, and the first part of April I was from home, and the grapery was neglected. There were many fine clear days, when it became so warm as to start the sap, and render the bud tender. Cold, sharp weather followed and froze them. The extremities being better covered escaped. So you see the matter is very simple.

Mr. J. Well I believe you are right, I am not alone in my misery, for other graperies have suffered in like manner. But would you advise opening the house in winter.

Mr. R. I certainly would in all fine, moderate weather. So as to let the heat escape. William Cheriton says, only he ought to have put it in large letters, "Let the house remain open through the winter, except in stormy, wet or very severe weather." Allen says, "As the spring advances, and the power of the sun increases, open the windows and doors of the house to let the heat escape, and to prevent the vines bursting their buds, shutting up again before night." You thought that all your labor and care were at an end, when last fall, you had pruned and laid down your vines, and covered them so nicely, but it was a mistake. For your comfort some little attention is required during the long winter months, but especially towards the approach of spring. I say, for your comfort, for how would you feel, if you could bestow no pains on your beloved vines for so dreary a length of time?

Mr. J. That is all very well, but what am I to do now. What would you advise?

Mr. R. Fruit the large canes all you can

but let me hint, that owing to the injury they have received, they may very possibly fail to bring the fruit to maturity. Meanwhile you can grow another cane for the ensuing season, which I trust you will not destroy by carelessness or inattention.

CLERICUS.

June, 1863.

BEST METHOD TO DESTROY APPLE-TREE WORMS.

Take three pints of soft soap in a pail, pour on hot water to dissolve the soap, and then fill the pail two-thirds full of water; take a light pole eight or ten feet long, cut notches in the small end, then wind around a piece of thick coarse cloth, several times—let it project over the end of the pole five or six inches. Now tie it firmly with a large twine, so that it will not slip off; thus you have the whole materials to commence warfare.

As soon as the worms appear in their webs, take the pail of soap-suds and swab, dip into the suds and apply to the nest of worms, wipe it all off, and thus proceed over the trees. This should be repeated at least every other day, as the eggs do not hatch at once. A little later, worms will appear on the body of the tree and large limbs, without any web, but in clusters on the sun side of the tree. These may be instantly killed by means of the swab, applying the soap-suds; it will kill them nearly as quick as fire. If the trees are large, have another pole sufficiently long to reach the top of the trees; but the short pole will be sufficiently long enough to do the most of the work. The best time to kill the worms on the body of the tree is from ten in the morning to three in the afternoon; they are then sunning themselves in clusters.

Strict attention must be paid until the worms wind up, as the eggs continue to hatch, and sometimes the worms come from the woods, or a neighboring orchard that has not been attended to—they have eaten all the leaves from that, and then they will come like an army; but if attention is given they may be soon destroyed by the soap-suds. Some persons neglect to kill the worms; they have no fruit, and the trees soon die.

I have found by many years' experience that this method to kill apple-tree worms is the cheapest, quickest done, easiest, (no climbing the trees,) and most effectual, for all the soap-suds wets are sure to die in a few moments.

JOHN T. ADAMS, in *Country Gen.*

A NICE METHOD OF PLANTING STRAWBERRIES

EDITOR OF AGRICULTURIST—SIR: Permit me to detail for the benefit of your readers, a method of transplanting strawberries, which

though not new is rarely employed, but which I followed last August with most gratifying success. The strawberry was that noble one, the *Triomphe de Gaud*. When the runners were about forming, I took three and four inch pots, filled them with a mixture of sand and black mould, and stuck the runners in them. As soon as they were filled with roots they were out off from the parent plant. A bed was prepared for them. They were turned out nicely and planted in it, growth commenced immediately. And now at this spring, no one could believe that they had been so recently planted. Single plants have made three and four crowns, and are sending up magnificent stems crowned with blossoms. I feel tolerably sure of having a fine crop of fruit. By the way let me say, that out of eleven kinds, planted side by side, and with little treatment, the Brighton Pine gives the best promise. If the crop is equal to its fine appearance it will be fine indeed. The soil is clay. The Brighton is a staminate, very early, similar to the Boston Pine. In writing of it thus, I do not mean to prefer it to the *Triomphe*, for the last is a late strawberry and therefore can scarcely be brought into competition with it. If the strawberry season is very short at the best, it behoves us accordingly to lengthen it, as much as we can. This may be done, by having the early, the mid season, and the late kinds. The Albany is an early kind, so is Jenny Lind, and McAvoy's Superior. The Hovey, the Sir Harry, and *Triomphe* being late.

This bids fair to be one of the most productive seasons, in the strawberry grower's calendar, in these parts. The only possible disappointment, is apprehended from severe frosts, which I fervently pray we may not experience.

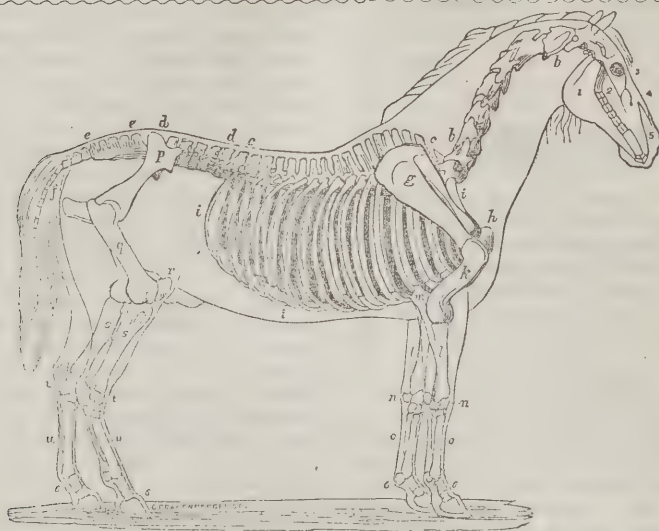
The above was written yesterday, this morning I have again examined the different sorts and really the Brighton is superb, the blossoms so abundant as to throw the foliage into the shade. Should this appearance not be deceptive I shall say the Brighton for me. But I have before been led away by the fine show of some of our barren staminate, and you can't catch old birds with chaff, says the rude proverb, therefore I will not get into too exhilarated a state. You shall be faithfully informed of the result. This bountiful rain is to us a wonderful blessing. How kind is the Great Creator to this land of ours, and alas! how basely ungrateful are we!! C.

June 5th, 1863.

LARGE DUCK EGG.—Last week a Ronen Duck, the property of H. Elliott, jr., of Hampton, laid an egg which weighed seven and a half ounces; it measured over eight and a quarter inches in circumference, and was nine and a quarter inches in circumference the longest way.

Veterinary Department.

Conducted by A. SMITH, V. S.



THE HORSE.

(Continued from last number)

The bones of the hind extremities are composed of the sacrum, the ossa innominata which is formed of three bones, viz: the ilium, the ischium, and pubis. These bones have already been described in a previous number. The remaining bones are the femur (9 a), the patella, (s), the tibia (t), the fibula, (7) the bones of the hock (10 10), the Metatarsal (u).

The femur is the largest bone in the body and is placed in an oblique direction downwards and forwards, and presents a shaft and two extremities. The shaft is smooth and prominent in front and flat posteriorly. The posterior surface has near its middle a round roughened portion to which is attached one of the heads of a large muscle called the triceps abductor femoris. Rising from the upper third of the external lateral side is a sharp prominence called the trochanter externus, and from the internal lateral side rises a similar prominence called the internal trochanter. Extending from the internal trochanter is a ridge which receives the name of the trochanter ridge, to which is attached the pectineus muscle. The lower half of the bone is constricted and has posteriorly a deep fossa called the supra condyloid fossa. The superior extremity is divided into two portions, one smooth and hemispherical, known as head of the femur, the other portion constricted. The head of the femur is lodged in a cavity called the acetabulum, forming the hip joint, on the inner side of the head is a deep notch into which is inserted the round ligament. On the outer

part of the superior extremity is a large irregular prominence called the trochanter major which presents two parts, the part looking backwards is called the summit, the other portion the convexity.

The inferior extremity presents two condyles and a trochlea. The condyles are posterior and divided by a deep notch called the intra condyloid notch. The trochlea presents two eminences divided by a vertical groove, the internal is the larger, and rounded. With the trochlea articulates the patella; the internal condyle is the larger and articulates with the tibia and semilunar cartilages. The Patella is an irregular bone, the anterior surface is convex and roughened for the attachment of ligaments, the posterior surface is smooth, articulating with the trochlea of the femur, and is divided by a prominence into two concavities. When the patella is displaced the animal is said to be *stifle d*. Partial displacement of the patella is of common occurrence in foals of a weakly constitution, especially when running on hilly grounds. This arises from intential absorption of the trochlea of the femur, causing the patella to slip outwards almost at every step.

Situated betwixt the femur and hock is the tibia. This bone is larger superiorly than inferiorly, the outer anterior surface of the body is grooved, and in it is lodged the extensor pedis muscle, the inner anterior surface is covered simply by skin and fascia, the posterior surface is marked by numerous longitudinal furrows for the reception of muscles. The superior extremity with the patella and femur form the stifle joint. Between this bone and the condyles of the femur are interposed the semilunar cartil-

age. Between the articulatory facets is an eminence called the tibial spine; in front of the spine is a tuberosity, from which extends the tibial ridge; at the lateral sides is a projection for the attachment of the lateral ligaments of the stifle. The inferior extremity is much smaller than the superior, and presents two smooth concavities or grooves, running obliquely from before backwards; besides these concavities are three prominent ridges.

Extending down the postero-external part of the tibia is a small bone called the Fibula or clasp bone, affixed to the former bone by cartilage and ligament. This bone presents a body and head, the head is broad and flattened and somewhat circular in shape, the body is slender and tapering, reaching about two-thirds down the tibia.

The Hock Joint is formed of ten bones, viz: the lower end of the tibia, the astragalus, os calcis, cuboid, three cuneiform bones, magnum medium and parvum, and three metatarsal bones.

The Astragalus or knuckle bone is situated immediately below the tibia, is somewhat pulley shaped and is the strongest bone in the hock. It presents three surfaces, superior, inferior, and posterior; the superior surface is smooth and wholly articulatory, the posterior surface is very irregular, presenting four articulatory facets for articulating with os calcis.

The Os Calcis projects backwards and upwards from the hock, and is divided into body and tuberosity. The body is slightly convex externally. The tuberosity is oblong, flattened from side to side, ending in a tuberosity to which is attached the tendon of the *gastrocnemius externus* muscle. The internal side is smooth and grooved giving passage to the tendon of *flexor pedis* muscle. The superior part of the tuberosity is covered with fibro cartilage and forms a true synovial joint.

The Cuboid occupies the outer part of the hock, is oblong in shape and has four surfaces, and articulates with the cuneiform magnum and medium, and also with the astragalus and large and external small metatarsal bones.

The Cuneiform magnum, or wedge bone, has two surfaces and four borders. The superior surface is smooth and wholly articulatory, except in the centre, where there is a groove. The inferior surface is slightly convex, and articulates with the medium and parvum. The external lateral border is in contact with the cuboid.

The Cuneiform medium is triangular in shape, and situated below magnum, its borders are rough and irregular for the attachment of ligaments.

The Cuneiform parvum is the smallest bone of the hock and is situated at the posterior internal part of the joint. The Metatarsal and remaining bones of the extremities are the same as in the fore extremity, which has already been described.

ANSWERS TO CORRESPONDENTS.

A. C., MULMUR.—Your horse in all probability is suffering from some of the effects of distemper, which are so many, that it is useless for us to prescribe knowing nothing as to how he is affected.

H. S., DRUMMONDVILLE.—Judging from the description of your case, we consider it one of Oeteo-Sarcoma, (a disease of frequent occurrence in cattle) that is a tumour on the jaw formed of osseous and soft tissues. The treatment will be to remove the tumour, and at the same time give plenty of nourishing and easily digested food.

Miscellaneous.

THE GENTLEMAN FARMER.

Gentlemen must not hope to farm for profit. The duty of making experiments, and establishing models, in order to show others not only what to do, but what not to do, is that which may fairly be expected of the wealthy territorial magnate. To turn farmer, and to spend money patriotically for the good of the farming interest, is the only serious aim of a gentleman's agriculture. It may be followed as an agreeable occupation, and purchase pleasure far more cheaply and healthily than many of the other pursuits whereby the rich and idle seek to kill their time. Now and then, too, it may pay; but these latter examples are the rare exceptions to the rule. And when a gentleman does make his farming pay, it will be found that he devotes to it an amount of personal care and labour which is by no means contemplated by the vast majority of those who take to farming otherwise than as their sole means of winning a livelihood. There is an old proverb, which says that "the best manure is the master's foot." And it is because amateur farming is followed as a pursuit, and not as a daily toil, that it is almost invariably a source of serious loss rather than of any money profit whatsoever. Farming, moreover, is in itself a trade so comparatively unprofitable that its returns are singularly ill calculated for bearing any diminution. It leaves no margin by which a man can contrive to get his pleasure, and at any rate not to be a loser by the pastime. To all who have enquired into the subject it is well known that the profits yielded on invested capital even by successful agriculture, are very considerably lower than is the case in ordinary trade. The result is visible in the notorious fact that what we call "fortunes" are rarely made by farmers, except in times of war and artificial prices. Every other branch of trade and manufacture supplies a better investment for a man's capi-

tal and personal labour united. About ten per cent. on his capital is all that an active and intelligent farmer can reasonably hope for as his return. From this must be deducted at the least four per cent., as the interest which would accrue from the capital if invested in such a way as to demand no labour or attention. Five per cent., indeed, is the deduction which is usually made in every case where risk is involved. But as we do not wish to overstate the case, let us allow six per cent., as the farmer's real profit on his capital as an agriculturist. It will quickly appear from a few figures that if an amateur farmer simply fails of making this six per cent., and does not also positively lose the additional four per cent., he is a marvelously lucky fellow. The chances are that he will not only lose the interest on his capital, but the whole rent of the land he cultivated into the bargain. And the secret of his loss is this. He pays too much for almost everything he buys. It is not that he necessarily farms ill, or is cheated on all sides, or fails to sell his produce at the market price. These sources of failure doubtless help to empty his pockets, but they are comparatively minor evils. His account book presents a balance on the wrong side, chiefly because he rarely purchases in the cheapest market. Every gentleman is painfully aware that for every cow he gives a guinea more than he ought to give. When he buys sheep, he thinks it little matter if he pays guineas instead of pounds. An extra shilling on a little pig is a bagatelle. And as for horseflesh—he never dreams of not giving a matter of five guineas too much for a fine teamster. In short, if we assume that our amateur pays only two shillings in the pound or ten per cent. more than the professional for his bullocks, his cows, his horses, and his sheep, we shall let him off more easily than he deserves. But what does this extra ten per cent. mean? The whole of the live stock of a farm, on the average, from horses down to sheep and pigs, cannot be supposed as remaining more than three years. In other words, about one third of it will have to be renewed every year. We have already got him to the point when all profits have more than disappeared, and his conscience tells a worse tale still. He is not only quite ready with his humble confession that he has habitually expended his inevitable sixpence where his tenant only pays firepence, but he painfully shrugs his shoulders when he reflects on his weekly list of labourers, and the banker's cheques which he has drawn on behalf of his numerous and sleek-looking teams. He desires only to draw a curtain tenderly over the past, and loudly echoes the statement that he who would succeed as a farmer must live like a farmer, and, above all, must screw like a farmer. If a man cannot do this, his consolation must be that he has ridden his hobby, and paid for it.—*The Saturday Review*

COMPARATIVE VALUE OF WOOD FOR FUEL.

MESSRS. EDITORS,—The subject of obtaining and preparing wood for fuel is one of considerable importance, and although it will probably receive but little attention from those who own land that has a supply of wood on it, yet there is a large class of persons who are under the necessity of buying their fire-wood, and it seems desirable that they should know the comparative value of the different kinds of wood for fuel, in order that they may be able to spend their money to the best advantage in the purchase of their fuel. From experiments made to determine the comparative value of different kinds of wood for fuel, results have been obtained according to the following table :

Shellbark Hickory . . .	100	Yellow Oak	60
Pigut Hickory	95	Hard Maple	59
White Oak	84	White Elm	58
White Ash	77	Red Cedar	56
Dogwood	75	Wild Cherry	55
Scrub Oak	73	Yellow Pine	54
White Hazel	72	Chestnut	52
Apple Tree	70	Yellow Poplar	52
Red Oak	69	Butternut	51
White Beech	65	White Birch	43
Black Walnut	65	White Pine	42
Black Birch	62		

"Some woods are softer and lighter than others—the harder and heavier having their fibres more closely packed together. But the same species of wood may vary in density, according to the conditions of its growth. Those woods which grow in forests, or in rich wet grounds, are less consolidated than such as stand in the open fields, or grow slowly upon dry barren soils. There are two stages in the burning of wood—in the first heat comes chiefly from flame; in the second, from red hot coals. Soft woods are much more active in the first stage than hard, and hard wood more active in the second than soft. The soft woods burn with a voluminous flame, and leave but little coal; while the hard woods produce a less flame, and yield a larger mass of coal.

"The purpose, however, for which it is needed must be considered. Although white pine, compared to hickory, is only as 42 to 100 for heat, if a quick fire be needed for immediate warmth, or kindling for coal or other wood, the pine, or other soft wood, is the most suitable."

The comparative value of hard and soft woods will depend very much on the purposes for which they are used. Where a steady and continuous heat is required, hard wood is much the most valuable; but when a quick and active heat with a steady flame is wanted, soft woods seem to be preferable. In making sugar I prefer about equal proportions of hard and soft wood, as I can boil more sap in a given time with this proportion than with either kind separate. On railroads soft woods are used exclusively, as a quick and rapid flame of heat is wanted. On the other hand the steady and intense heat required for the furnace or forge needs hard wood or coal to produce it. *Ex*

perience would seem to indicate that for the ordinary uses of the family a portion of both hard and soft wood was the most economical; but it should always be *dry wood*. C.T. ALVORD. *Wilmington, Vt. Cultivator*.

IMPROVEMENT IN SOAP BUBBLES.—The soap bubble is a great institution. It affords to the moralist an emblem of frailty, instability, and the transitory character of many things in life and in human affairs. It affords some of the delightful amusements to childhood. It is also of great use as a philosophical instrument. By it, many of the abstruse laws of natural philosophy can be demonstrated, and it has been instrumental in bringing about the discovery of some of the most interesting phenomena of the rays of light. The great Sir Isaac Newton used it for this purpose, and was assisted by it in some of his most brilliant discoveries in this branch of philosophy. It is useful also in demonstration the pressure of aeriform forces, and in exhibiting to the eye, the fact that expansive forces which are free to act on every side, assume a spheroidal form, or direction. We have been in the habit of considering the soap bubble as one of the perfections that could not be improved upon—a thing which was always uniform in its tenuity of substance, and shortness of duration, and we have often regretted this last character of it, wishing that it might last a little longer, or give us some way by which it could be modified in shape if in no other particular. It seems from the account we glean from a foreign journal, that in this age of improvements, even the soap bubble comes in for its share of the improvements of the day. A mode has been devised by which it is made to not only last longer, but to allow of its being thrown into different shapes and forms almost at will.

We will give an extract of these improvements. It will interest some of our readers who are fond of using the means of research which nature has given us, whereby to enlarge our sphere of knowledge and usefulness, even from so insignificant an instrument as a *bubble*.

M. Plateau, an experimental philosopher of Paris, in France, in pursuit of some of his investigations, was anxious to obtain liquid figures of different forms and shapes, that should remain in a quiescent state for some time. He, at first, made a common mixture of alcohol and water of the density he required. This was to constitute the sphere in which the bubble produced should remain. By using oil, instead of soap suds, and the water and alcohol instead of air to fill it with, he obtained an oil bubble in the alcohol mixture. These, of course, would remain in the mixture some little time. When shut up in a vessel, they would remain some time longer than a common soap bubble in the air. On further search, he improved the bubble still further, which has been of much advantage to him in his investigations. He uses glycerine with strong soap suds, with which to make his

bubbles. These he found to be capable of enduring much longer than any other kind. He next wanted to obtain them of different shapes, or figures. This he accomplishes by the following very ingenious arrangement. "If," says he, "through an ordinary tobacco pipe; a bubble of this material be blown, and then carefully deposited on a metal ring, one and a half inches in diameter, previously moistened with the same liquid, this bubble, if not disturbed, will last three hours, and if in a close vessel three days." We presume this is the first instance of *hooping* a bubble to make it stronger. In order to make a cylindrical figure of this bubble, Mr. Plateau adopts the following method. Two rings of the same diameter are made. One of them rests upon three legs, and the other slides up and down on a perpendicular shaft, with a thumb screw to fasten it to any height. Blow a bubble and place it carefully on the lower ring. Then let down the upper ring (both being moistened as before) until it crowns the top of the bubble. The bubble then adheres to both; then by raising the ring carefully the bubble will be drawn out into the cylinder. By making figures of several angles, (polyhedrons,) and dipping them into the liquor, a film of it will extend from wire to wire, and form the figure in question.

This is what we call an improvement in the soap bubble, and is hereby rendered more useful as an instrument of investigation and research, as well as more varied and extended in its applications to the sports of those "men of a smaller growth" called children.—*Maine Farmer*.

"WHO IS THE BREEDER?"—By long established custom, the party in whose possession a short-horn calf is *born* is said to be *the breeder* of that calf, although the dam may have been the property of another person, even up to the very day of calving. All the *credit* of having bred the animal is claimed by the dam's new owner; but all the *merit* of having bred the animal is clearly due to another. An outlay of *money* avails to secure the former; but the latter is the result of care, thought, sagacity, anxiety, and experience. It is conceivable that a man of wealth should purchase fifty cows of great value, each in calf to some distinguished bull (a Booth bull, for instance), obtained, by hire, at a distinguished price; and all within a few weeks of bringing forth their offspring. The cows in due time calve; and their produce, *the consequence of another man's capital and judgment*, are recorded in the Herd Book, not to *his* honour to whom, in fact, honour alone belongs, but as memorials of the breeding skill of one who may possibly possess no breeding skill at all, and whose part in the transaction was simply that of arranging a pecuniary investment. The real breeder of a calf is unquestionably the person who brings the sire and dam together; and yet, according to orthodox usage, the place of calving constitutes the criterion. We sug-

gest no alteration in the ordinary method of proceeding; it is perhaps as good as any other; but our readers will perceive that it renders the Herd Book a less faithful exponent of the history of facts than it would otherwise be, and very frequently imparts undeserved lustre to obscure names.—*Bell's Messenger.*

USE OF THE TURKISH BATH IN VETERINARY PRACTICE.—Sir,—Though the use of the Turkish bath in the treatment of disease in the human subject has made so much progress of late, we seldom hear of its application in the case of quadrupeds; and it may not, therefore, be without use or interest if I give you a short account of its effects in an instance in which it was lately tried under my directions. The animal was a cart mare. When I was first told she was ill, and saw her two or three hours after the first appearance was observed, she was shivering with her hind legs straddled, continually looking round at her flanks, first one side and then the other, and very unwilling to move at all. Her pulse was full, and 80 in the minute. The symptoms appeared to indicate inflammation in the region of the kidneys. I had her removed to a loose box, and having the command of a cattle-bath, I had the fire at once lighted; but as it would take some hours to heat, and the symptoms were urgent, I had the mare bled, a purgative of dissolved aloes (4 drachms) administered, and a mustard poultice applied to the loins. During the bleeding the pulse varied from 80 to 100, and when it became feeble, and the mare showed signs of weakness, the bleeding was stopped. More than 7 quarts of blood had been taken by measure. At the end of 4½ hours after the bleeding, the pulse was not reduced in frequency, ranging from 80 to 84, but it was softer than before. The mare, however, was still suffering, lying at full stretch in the loose box, occasionally struggling from pain, and raising her head to look at her flanks. By this time the bath was heated to 100 degrees, and I was anxious to get the mare into it. It was with some difficulty that she was got on her legs and up to the bath, but from the moment she entered she seemed to find relief, and after a short time showed no signs of pain. She was kept for 5 hours in the bath, the temperature increasing to 120 degrees, which it was not allowed to exceed. After washing in the outer chamber of the bath with tepid water, and sheeting, she was brought down to the stable and dried with cloths. Her pulse had come down to 60 degrees, and she appeared entirely free from pain, and took a little bran mash. She dunged, and passed a small quantity of urine without pain. She had drunk water freely while in the bath. After an interval of an hour and a-half she was put again in the bath for about three hours. The treatment of the bath twice a day and then once was continued for four or five days, at the end of which time she was quite recovered. The cattle bath can be so easily

constructed, and at so moderate an expense, that it is much to be regretted it is not in more general use. I have seen a cow with highly inflamed udder after calving speedily cured of it; and for common colds and coughs in horses it is most effectual in arresting and removing them.—Yours, &c. C. E. F., December 15, 1862.—*Mark Lane Express.*

THE RURAL SEASON IN ITALY.—The only season of the year in which the Italians are really loth to tear themselves from the country is the latter end of Autumn—October and November—at least up to St. Martin's day. Lovely as the country is during spring and summer in North Italy, it seems to intensify all its charms so as to clothe in ineffable loveliness the fall of the year. The air sharp and bracing as it is apt to be in the morning and evening, is never so balmy and genial as it becomes at this time towards the noon, and continues to the close of the usually bright, gorgeous sunset. The stillness of the landscape, generally prevalent in these mountain-screened regions, becomes infinitely more striking, and, as it were, palpable in this season of nature's repose. Nothing can be slower and gentler and more lingering than the decline of a North Italian year—the autumn tints steal over the foliage by imperceptible degrees, as the crowsfoot over the countenance of a lovely woman untouched by illness or sorrow; the leaves drop one by one, circling and winding round through the still air, like so many flakes of undrifted snow; the first touch of decay seems rather to revive and enhance than to blight or even tone down and mellow the richness and luxuriance of this bountiful land; and the sky, no longer dazzling with its settled glare, no longer monotonous in that cloudless blue which is apt to cloy us in settled summer or winter weather, entertains us daily, in this period of transition, now with vast masses of heavy vapours in the shape of phantom clouds clinging to the Alpine summit, now with a thin white veil of mist floating over the plain like a transparent ocean.

A HINT FOR OUR SPARROW CLUBS.—Those valiant members of the agricultural community who spend their time in killing birds, and then meet together to celebrate their folly, may do well to read the following prices, which the Auckland Acclimatisation Society offers for the introduction of birds and animals in which New Zealand is deficient: Hares, per couple, male and female, £5; red deer, ditto, £15; blackcock or grouse, cock and hen, £10; silver pheasants, ditto, £5; nightingales, ditto, £5; English partridges, ditto, £4; cuckoos, ditto, £3; missel thrush, ditto, £2; common thrush, ditto, £2; blackbirds, ditto, £2; starlings, ditto, £2; sky-larks, ditto, £2; rooks, ditto, £2; crows, do. £2; jays, ditto, £1 10s.; robins, ditto, £1 10s.; wrens, ditto, £1 10s.; bullfinches, ditto, £1; green or grey linnets, ditto, 15s.; sparrows, 5s.; English quails, ditto, £1. That distinguished ornithologist

thologist, the Rev. F. O. Morris, says in his very interesting account of the sparrow. "I have watched pairs of sparrows repeatedly feeding their young, and have found that they bring food to the nest once in ten minutes during at least six hours of the 24, and that each time from two to six caterpillars are brought—every naturalist will know this to be under the mark. Now, suppose that the 3,500 sparrows destroyed by an association for killing sparrows were to have been alive the next spring, each pair to have built a nest, and reared successive broods of young during three months, we have, at the rate of 252,000 per day, the enormous multitude of 21,168,000 larvæ prevented from destroying the products of the land, and from increasing their numbers from 50 to 500 fold!" (see 2nd vol. of first edition, p. 279).

DISCOVERY OF A FOREST OF NUTMEG TREES.

—Intelligence has been received by the Dutch Government that Dr. Burnstein, while undertaking a scientific expedition for account of the Colonial Government of Netherlands, India, to the Molucca Islands, and New Guinea, has made a discovery in the Island of Batjau, which may lead to important results, and cannot fail to prove of the greatest interest to all grocers and merchants engaged in the spice trade. In his ascent of the chain of mountains known by name of the Sabella range—which, it appears, has never been hitherto visited, or at least, scientifically examined by any other European previously—the learned doctor discovered, at an elevation of from 2,600 to 3,000 feet above the level of the sea, a very extensive forest of nutmeg trees, laden with fruit of unusual size and excellent quality—in fact, far superior to any hitherto seen in the European markets. In consequence of the favorable nature of Dr. Burnstein's official communication, reporting that this nutmeg tree forest extends over a very large tract of country, orders have been sent out from Holland to the Governor General to obtain a few piculs of this produce as a sample, and to send it to Holland, where its value will be practically tested by the price it fetches in the usual spice sales of the Netherlands Trading Company.—*The Grocer*.

TO DESTROY RATS IN BARN AND RICK.—

Melt hogs' lard in a bottle plunged in water of temperature of 150° Fahrenheit; introduce into it half an ounce of phosphorus for every pound of lard, then add a pint of proof spirit or whiskey; cork the bottle firmly after its contents have been to 150°, taking it out of the water and agitating till the phosphorus becomes uniformly diffused, making a milky looking fluid. The spirit may be poured off on the liquid cooling; and you have then a fatty compound, which, after being warmed gently, may be incorporated with a mixture of wheat flour or sugar, flavored with oil of rhodium or oil of

aniseed, &c.; and the dough, on being made into pellets, should be laid at the rat-holes; being luminous in the dark, and agreeable both to their palates and noses, it is readily eaten and proves certainly fatal. The rats issue from their holes and seek for water to quench their burning thirst, and they commonly die near the water.—*Dr. Uer*.

Mediterranean Winds.

The physical history of the Mediterranean cannot be complete without some notice of the winds, which move this great mass of inland waters. We do not find here, nor could we expect their existence, the constant or strictly periodical atmospheric currents, which sweep over the wider oceans of the globe. In a landlocked basin, thus irregular in outline, studded with mountain isles and girt round in great part by mountain chains, local causes modify or predominate over those general conditions to which the atmosphere is subjected by the rotation of the earth, and its annual revolution round the sun. To other influences on the winds of this sea must be added that of the great African desert, stretching for 2,000 miles in a direction parallel to its southern shore, and in parts touching upon it—an enormous waste of bare sand or rock, vehemently reflecting the rays of a southern sun, and acting as a furnace upon the atmosphere above it. In effect of these and other circumstances, the winds of the Mediterranean, though to a certain extent regular and periodical, yet abound in local characters and local names; and we might readily enumerate more than a dozen, pertaining to different coasts or gulfs—as the *Birazzones* of the south-east coast of Spain; the *Vent de Bize*, or *Mistral*, of the southern French coast; the *Raffiche* of Corsica, and other mountainous islands; the *Gregale* of Sardinia and Malta; the *Siffanto* and *Bora* of the Adriatic; the *Tramontana* generally over the Levant; and the *Levanters* and *Sirocco* of the whole Mediterranean. Of these several winds, the *Sirocco*, or south-easterly wind, is by far the most remarkable; not merely from its frequency and wide prevalence, but yet more from its physical properties, and peculiar effects on the animal frame. These effects, mainly manifested on the nervous and muscular powers, are now become too familiar to the traveller to need being dwelt upon in detail. Every one who has felt this wind as it occurs at Malta or Palermo will remember that prostration both of body and mind, which is its instant and continued effect—an effect certainly not owing to temperature alone, since winds of greater heat may blow from other quarters without producing the like results. Various circumstances make it probable that the atmospheric electricity is concerned in these phenomena; but we need minute and prolonged observations, like those of Peltier and Qutelet, to satisfy the demands for

facts, before this or any other hypothesis can stand good. Such research might be readily carried on at Malta; and with collateral observations as to the proportion of zone, and other properties of this strange and malignant wind the local relation of which to the African and Arabian currents, and to the Samiel wind of Egypt, will at once occur in any speculations as to its causes. The frequent suddenness and violence of Mediterranean storms are well known to those who have been voyagers in the Gulf of Lions and the Archipelago. But we must add a few words also as to the calms of the deep sea—the *bonaccia* of the Italian mariner—those times when its waters sleep under the sun for days together, as if they had never been ruffled by wind or storm. The voyager in the Mediterranean in older times loitered long and wearily under these calms. The traveller of our own day presses forward despite them; with the aid of that ever constant motive power, created by and subjected to human skill. Yet even he may well long for breezes to stir the still surface and give life and motion to the stagnant air. The *pumaton anērithmon gelasma* portrays, in language almost peculiar to the great poet who uses it, that happier aspect of seas which gladdens with movement the eye of the sailor—such as Orude so often and so fondly conveys to his canvas, with accompaniments which the Mediterranean alone can furnish to the painter—*Dr Holland's Scientific Essays*.

Editorial Notices, &c.

SHEEP HUSBANDRY.—We learn that there is now in preparation and to be published in a few weeks by J. B. LIPPINCOTT & Co., Philadelphia, and D. D. T. MOORE, Rochester, N. Y., a new and complete work on Sheep Husbandry, entitled *THE PRACTICAL SHEPHERD*, by the Hon. HENRY S. RANDALL, LL.D. author of "Sheep Husbandry in the South," "Life of Jefferson," "Fine Wool Sheep Husbandry," etc.; also Editor of the American Edition of "Youatt on the Horse," of which over thirty thousand copies have been sold. The author of "The Practical Shepherd" is well known as the ablest and most valuable writer on Sheep Husbandry in this country, and the work cannot fail of becoming the standard authority on the subjects discussed. It must prove indispensable to every American flock-master who wishes to be thoroughly posted in regard to the History and Descriptions of the popular breeds of Sheep, their Breeding, Management, Diseases and remedies. The work is intended to give that full and minute practical information on all subjects

connected with Sheep Husbandry which its author has derived from the direct personal experience of thirty-five years with large flocks, together with that knowledge of different modes and systems which has flowed from a very extensive correspondence during a long period with leading flock-masters in every part of the world.

The first six chapters of "The Practical Shepherd" will be devoted to a full description of the best breeds of Sheep in the United States

including the different varieties of the Merino, and the various English mutton breeds, and these will be illustrated generally with engravings from original drawings from life. These will be followed by Chapters on Cross-Breeding; on Breeding In-and-in; on the Qualities and Points to be Sought in Sheep; on Yolk and its Uses; on the Theory and Practice of Breeding; on the adaptation of different Breeds to Different Soils and Circumstances; on the Profits of Wool and Mutton Production and their Prospects in the United States; on the Spring Management of Sheep; on Summer Management, (two chapters); on Fall Management; on Winter Management, Food, &c., (two chapters); on Diseases and their Management, (several chapters).

We bespeak for this work when it appears that amount of attention to which the importance of the subject and the ability of the author entitle it.

THE BRITISH AMERICAN, No. 2, June: Toronto, Rollo & Adam.

The second number of this Canadian monthly fully sustains the favourable opinion we expressed in our last. Its articles are varied and interesting. If it is continued in the same spirit and with similar ability, the *British American* cannot fail to prove a welcome visitor in every family possessing the least taste and refinement throughout the whole extent of these Provinces. Terms \$3 per annum.

THE LONDON QUARTERLY REVIEW, May, 1866.
THE NORTH BRITISH REVIEW, May, 1863.

These standard British Quarterlies are complete as usual with articles of substantial merit on all the great questions of the day. The American War in the former, and the Disintegration of Empires, and British Intervention

in foreign struggles, in the latter, will be read at this moment with a peculiar interest on this side the Atlantic. The elaborate article on Vegetable Epidemics should be carefully studied by farmers and gardeners in particular. *Blackwood* for May, has as usual, several articles of great merit. Now is a convenient time to commence subscribing to these British Periodicals, as new volumes commence this month. All four Reviews with *Blackwood's* monthly magazine can be had at the extraordinary low sum of \$10 per annum; or each singly, for \$3. They can be ordered of Booksellers, or from the American publishers, Leonard Scott & Co., Walker Street, New York.

TORONTO MARKET PRICES.

TORONTO, JULY 1, 1863.

Fall Wheat, per bushel.....	\$0 85 to \$0 95
Spring Wheat, "	80 " 87
Barley, "	60 " 70
Peas, "	50 " 55
Oats, "	45 " 50
Rye, "	56 " 60
Beef, "	4 00 " 5 00
Mutton, "	4 00 " 4 50
Potatoes, per bushel,	40 " 50
Apples, per barrel,	2 00 " 2 25
Fresh Butter, per lb.,	11 " 12½
Tub Butter, "	10 " 11
Eggs, per doz.	10 " 12
Chickens, "	35 " 40
Calves, each,	3 00 " 5 50
Hay, per ton,	10 00 " 16 00
Straw, "	9 00 " 10 00
Hides, per 100 lbs.	4 50 " 5 00
Calfskins, per lb.	8 " 9
Lamb skins, each	50 "
Wool, per lb.	36 " 38
Plaster of Paris, per barrel ..	95 " 1 00
Salt, per bbl.	1 45 " 1 47

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Marquis of Oxford, got by William of Oxford, calved 20th March 1863.

Warwick, got by Moreton Duke, calved 26th March 1863.

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AGRICULTURIST OFFICE. }
Toronto, June, 1863. }

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THE
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OF UPPER CANADA.

VOL. XV.

TORONTO, AUGUST, 1863.

No. 8.

THE PROVINCIAL EXHIBITION.

We beg leave to remind farmers, and all others who may intend to be exhibitors at the approaching Provincial Show at Kingston, this autumn, of the necessity of making timely preparations for the same. The Show takes place on the 22nd to 25th September. The entries of Cattle must be made by the middle of August, and of other articles shortly afterwards. Prize Lists and entry forms, with full particulars and directions, have been sent to the Secretaries of Agricultural Societies all over the Province, from whom exhibitors who have not received them otherwise may obtain them. The Local Committee on their part are making ample and substantial preparations for the accommodation of stock and articles, by thoroughly repairing the buildings already existing, and erecting extensive additions to them, as well as some entirely new structures. The subjoined article, which we cut from the *Kingston Daily News*, describes in detail the works in progress, or completed:—

PREPARATIONS FOR THE EXHIBITION.—To Kingston belongs the honor of erecting the first permanent buildings for the purposes of the Agricultural Association of Upper Canada.—Previous to the Exhibition of 1856, the Government of the day granted a license of occupation, for the term of twenty years, of an area of about twenty acres on a portion of the Penitentiary farm lot, and on this the Local Committee raised a handsome and substantial cruciform structure of wood and glass; also ranges of commodious buildings for cattle, horses, pigs, sheep, &c., and a Mechanics' Hall

for machinery and agricultural implements—the whole costing about sixteen thousand dollars. The main building, or "Palace," though not so extensive as its heavy, ungainly rival at Toronto, is a light and elegant structure, and well adapted for the purposes for which it was erected. The transept is 190 feet long and 56 feet wide; the general height of the building 34 feet, and that of the cupola about 60 feet. There is in the whole structure about 24,000 feet of fluted glass, being more than double the quantity in the Toronto Palace. The building is undergoing various repairs and improvements, and additional room will be secured by the removal of the unsightly and useless orchestra which now occupies a large space in the nave. The repairs to the wood-work, under the superintendence of Mr. Geo. Brown, are rapidly approaching completion, and Mr. Wm. Robinson has made good progress in the painting and glazing. In the interior the roof has been colored a pale yellow, the ribs vermilion, and the elliptic sweeps and posts a bright blue, the contrast being exceedingly lively and pleasing. The coloring of the outside is blue and white, and when finished, the exterior of the building will present a clean and attractive appearance. The Mechanics' Hall, a neat and substantial two-storey structure lying to the southeast of the Palace, is being extended by an addition of sixty feet to its length, its original dimensions being 108 feet by 26. It, also, will be colored outside and in:—the interior red, white and blue—which will greatly improve its appearance. The old cattle-sheds have been thoroughly repaired and strengthened, and the accommodation for this class of animals has been largely increased by the erection of a new range of buildings on the west side of the grounds. The old range is 428 feet long by 32 broad, and the new 300 feet by 12, both being capable of housing comfortably upwards of two hundred

head of cattle. On the west side have also been erected new sheep and pig sheds and a capacious carriage house. The dimensions of the former are 300 feet by 12, the capacity being sufficient to accommodate about 500 animals. The carriage shed is 400 feet long by 16 wide, and will, no doubt, afford ample room for the class of manufactures which it is intended to accommodate. The old horse stables at the south end of the grounds are in pretty good condition and will require but few repairs. The range is 660 feet long, and can house comfortably about two hundred animals. The ventilation, however, is very imperfect, but the evil will be remedied to some extent by cutting an aperture in each door and inserting therein a strong wire grating, which will also increase the facilities for viewing the horses. Another old range of stables, on the east side, is in a very dilapidated condition, and extensive repairs and alterations are needed to render the stables serviceable. It is believed, however, that they will not be required, but it is the intention of the committee to have them thoroughly repaired in case the other stables should prove insufficient to accommodate all the horses entered for exhibition. This second range is 300 feet long, and when put in order will house about one hundred animals. On either side of the Mechanics' Hall are two tiers of poultry coops, each 108 feet long, and containing 54 compartments—the whole four tiers being capable of holding upwards of two hundred pairs of fowls. These coops are in a fair state of preservation, and need very few repairs to render them secure. In addition to the buildings already noticed, it is intended to erect another, to be devoted to various purposes. It will be 35 feet long and 20 wide, and will comprise, among other apartments, a refreshment room and a retiring room for the ladies. All the buildings on the ground are substantial permanent structures, and when the repairs and improvements they are now undergoing are completed, will compare favorably with any similar buildings in Upper Canada. Mr. Power, the architect, and the contractors, Messrs. Brown, Robinson, and R. M. Horsey, are pushing forward the work in their respective departments with great vigor, and in a few weeks everything—so far as the buildings and ground are concerned—will be in readiness for the coming Provincial Exhibition.

FLAX.

We had the pleasure of seeing, a few days ago, two or three very fine samples of flax, in the green, nearly mature state, just pulled from the ground; one of the samples, furnished by Mr. J. A. Donaldson, having been grown on the farm of Mr. Robert Watson, of Whitby,

and the others furnished by Mr. Mitchell, of Norval, grown on farms in that vicinity. These samples are about $3\frac{1}{2}$ feet in length, and the fields from which they were taken present a beautiful, even crop, which would be considered excellent in any flax producing country. Mr. Donaldson estimates that the Whitby field will produce 20 bushels of seed to the acre, and fully 500 lbs. of scutched fibre. This, at \$1.50 per bushel for the seed, and only 10 cents per lb. for the fibre, will give the nice return of \$80 per acre, an amount not easily realized from farm crops. The crops at Norval are represented as equally good. Experiments in flax culture are rapidly convincing the farmers that it will soon be found the most remunerative crop that they can cultivate.

TREATMENT AND CULTURE OF THE POTATO, WITH REFERENCE TO THE PREVENTION OF DISEASE.

Although we have not heard as yet that the Potato disease has manifested itself to any serious extent in Canada, it may not be unreasonable, judging from the past, to call the attention of our readers to some facts recently observed by distinguished men in Europe in reference to one of the most difficult problems belonging to scientific and practical agriculture.

Much interesting information has lately been elicited in connection with this important subject, of which we purpose here to give a brief *résumé*. At one of the Council Meetings of the Royal Agricultural Society of England, attention was directed to a method of treating potatoes for "sets," discovered accidentally by Professor Bollmann, of St. Petersburg. The process consists of subjecting the potatoes to a high temperature, which dries and shrivels them. Even when this was carried to the "charring point," the vitality of the tubers was not destroyed, for some which were planted much charred produced as good a crop as those which were merely shrivelled. This method of heating potatoes was discovered in 1853, and so completely established does it seem in practice that it is stated that in Russia on many estates, drying houses are being erected. The principle seems to be the getting rid of the superfluous moisture which is found in all potatoes affected, or predisposed to be affected, by the disease, and which moisture is said to be always in excess as

compared with the healthy tubers. It was stated by Mr. Williams, of Chester, as the result of his observations in Anglesea, that "Those parts of potato fields where there are most weeds, such as grass, chickweed, and the like, suffer least from the disease; that the haulm decays many weeks earlier than it used to do before the disease came in, and the young tubers thus deprived of their natural shelter from the sun, may profit by the protection given them by the weeds."

An intelligent correspondent of a British paper remarks in reference to the best time for kiln-drying potatoes:—"According to the practice of Professor Bollmann, the operation was performed as soon after digging time as it happened to be convenient, and that the potatoes were dried in single layers on a heated floor, the temperature of which was gradually increased to the maximum of 140 degrees Fahrenheit. After being submitted altogether 24 hours to this process, the tubers will be dry enough to be replaced by a fresh supply, which of course will have to be repeated until the whole stock of seed potatoes have been heated in a similar manner.—The seed may afterwards be put in sacks or bins, or disposed of in heaps on the floor of a dry loft. For the convenience of cottagers or others whose stock of seed potatoes may be small, the common oven will answer the same purpose. It is now a well established fact in vegetable physiology that tuberous rooted plants especially perform the functions of suction after the stalks have died away, and the roots to outward appearance are fully ripe. In the case of late potatoes, therefore, the deposition of the organic matter cannot be reckoned to begin until the first week in November, and as this most important process in most vegetable structures is not completed until the end of January, we may safely determine the latter period to be the best for kiln-drying the potatoes.—Again, early potatoes should be dried in the same way any time between the middle and end of October. Let the process be carried out according to the rules here laid down, and the manner of the operation will be found to be in harmony with the revelations of Botanical science. Besides, the cultivator should never lose sight of the fact that the potato loses nothing but moisture by drying, and seeds are not considered saleable until carefully dried. One of

the causes of disease is thus removed before planting. It often happens that seed potatoes have to be spritted at least once before planting, an operation which afterwards greatly impoverishes the crop." Our readers will of course make the necessary allowance on account of the difference of climate between England and Canada, in reference to the periods of the year mentioned in the preceding extract.

Several artifices have been employed by different individuals, with more or less success, for the purpose of evaporating the excess of moisture which always exist in tubers pre-disposed to disease. It is a good plan when digging potatoes to leave them a while in the field in small lumps but slightly covered with the haulm, and afterwards store them away in a dry and airy situation. Much of course will always depend on the nature of the soil, time of planting, manure and cultivation, and the character of the season. Wet, stiff land will never produce sound and nutritious tubers. Hence the necessity of draining; and in many situations the application of lime previous to planting, will be found exceedingly beneficial. No plant perhaps has received such neglect and unreasonable treatment as has this plant for the last half century, and what was formerly a certain and profitable crop has of late become the most precarious and unremunerative.

TAR AND TURPENTINE.

Recently some parties in Michigan have turned their attention to the manufacture of tar in the pineries of that country. The product appears to be obtained in paying quantities, and sells readily at \$1 per gallon, American money. It seems that the parties who have entered into the manufacture are Norwegians, who settled at Grand Traverse last fall. If this manufacture proves profitable in Michigan, there is no reason why it should not be equally so in Canada. The following article on the production of turpentine and tar is from the N. Y. *Scientific American*.

The immense forests in North Carolina which cover the sandy ridges between the swamps and water-courses, consist almost wholly of the long-leaved pine, the *Pinus palustris* of the Southern States. From them is gathered one of the great staples of North Carolina—the turpentine. These trees at maturity are seventy or eighty feet high, and their trunks eighteen

or twenty feet in circumference near the base. They grow close together, very straight, and without branches two-thirds of their height. Overhead their interlocked crowns form a continuous shady canopy; while beneath, the ground is covered with a thick, yellow matting of pine straw—clean, dry, level, and unbroken by undergrowth. The privilege of tapping the trees is generally farmed out by the landowner, at a stated price per thousand, about from twenty to thirty dollars. Under this privilege the laborer commences his operations. During the winter he chops deep notches into the base of the tree, a few inches from the ground, and slanting inward. Above, to the height of two or three feet, the surface is scarified by chipping off the bark and outer wood. From this surface the resinous sap begins to flow about the middle of March, at first very slowly, but more rapidly during the heat of the summer, and slowly again as winter approaches. The liquid turpentine runs into the notches, or boxes, as they are technically called, each holding from a quart to half a gallon. This, as it gathers, is dipped out with a wooden spoon, barreled, and sent to market, where it commands the highest price.—That which oozes out and hardens upon the scarified surface of the tree is scraped down with an iron instrument into a hod, and is sold at an inferior price. Every year the process of scarifying is carried two or three feet higher up the trunk, until it reaches as high as a man can conveniently reach with his long-handled cutter. When this ceases to yield, the same process is commenced on the opposite side of the trunk. An average annual yield is about twenty-five barrels of turpentine from a thousand trees, and it is estimated that one man will dip ten thousand boxes.

The trees at length die under these repeated operations. They are then felled and burned for tar. The dead trees are preferred for this purpose, because when life ceases, the resinous matter concentrates in the interior layers of the wood. In building a tar kiln a small circular mound of earth is first raised, declining from the circumference to the center, where a cavity is formed, communicating by a conduit with a shallow ditch surrounding the mound. Upon this foundation the split sticks are stacked to the height of ten or twelve feet. The stack is then covered with earth, as in making charcoal, and the fire applied through the opening in the top. As this continues to burn with a smouldering heat, the wood is charred, and the tar flows into the cavity in the center, and thence by the conduit into vessels sunk to receive it.

AGRICULTURE OF NATAL.

[We take the following interesting letter from a recent number of the *Scotch Farmer*, written by a former resident of Warwickshire, England,

who emigrated to Natal some years ago. The communication will afford our readers some idea of the state and capabilities of agriculture in this new and rising Colony on the south eastern shores of Africa.—EDS.]

"Richmond, Port Natal, Feb. 25, 1863.

MY DEAR SIR,—Your letter of December last is duly to hand, and I proceed without delay to answer your inquiries.

Your first query as to the advantages and disadvantages of this colony, I presume you mean in comparison with England. In a young colony the common luxuries of Europeans have, of course, to be imported. It may be therefore allowed as a fair average that the purchaser from a retail dealer of imported goods gives about double their ordinary retail price at home.

I consider, however, that no emigrant need spare more than ten per cent. of his income on imported goods. We can produce all the common necessities of life. With a semi-tropical climate on the coast, and an English, or speaking more locally, a Devonshire climate on the uplands, we can produce many things unknown to most Englishmen. There are doubtless, many advantages in England above those of any colony; one thing, however, is very certain, we are not a quarter so taxed, half so worked, and not near so unhealthy as the people of your pushing, elbowing, heel-kicking, over-crowded manufacturing towns, which I think, in a few words, shows no small advantage.

The greatest disadvantage we feel is want of more population of the right colour and stamp. I am glad, however, to observe that Natal is now fast drawing crowds of emigrants to its shore, and many of them of the right stamp, with capital, and the right sort of pluck to carry them through first difficulties. We have thousands and thousands of acres lying ready for the pushing emigrant to turn into thriving homesteads and blooming corn fields.

Your Warwickshire farmers could for one year's rent (and for much less) buy a freehold farm within an easy distance of market. Some of your farmers think it a fine thing to farm 20 cows and 150 acres. I know parties who were common ciodhoppers in one of the southern counties, and who were sent out here out of charity, who would rather grin at their old master's ideas of farming. A six thousand acre farm (equal to any farm in your country for richness of pasturage, &c.), with a hundred or even two hundred head of cattle running upon it, is thought no great thing of, as you may be sure, when many parties have as much as 20,000 or 30,000 acres. Thousands of Kafir families (those *poor* creatures of whose lamentable condition Exeter Hall gentlemen so frequently descant) are squires of the land in this kind of wealth.

There is another disadvantage we suffer from

—viz., want of reliable labour. The Kaffir population is our real labour. The Kaffir population is our labour market; but, like all blacks living a pastoral and nomadic life, they are very adverse to long periods of work. Emigrants soon settle down to be their own masters, as by dint of hard work, with a little scheming and friendly helps from settlers, in two or three years you would observe quite a change in their affairs for good. A Kaffir works one month and rests six. He gets as much in that month as serves to buy him his blanket and few trinkets for his six months of idleness. After marriage a Kaffir is seldom found to work; his wife, or rather wives (for he is a staunch polygamist, and has as complete a harem as many a Grand Turk) do all his laborious work—hew his wood, draw his water, plant his crops and gather them, while our sable Othello sits beer-drinking and snuff-taking. You may be sure, then, that while the gentler sex are really the only working class of Kaffirdom, there will be little chance for white settlers to do great things in the way of agriculture—say such as cotton or sugar growing. It riles a colonist, more particularly an emigrant's feelings, to see thousands of those able-bodied coloured gentry idling their days away while his fields are lying idle for want of more hands. This is often a real cause of bitterness between the two races, whose feelings and tendencies are so widely different. A colonist is often obliged to resort to bribing a native chief or head man to get Kaffirs to turn out to gather his crops. It may seem strange to your years to hear the cry of want of labour while so many thousands of our fellow-countrymen are starving for want of that which brings them bread-work. Would to God that a few thousands of the more able-bodied of the Lancashire operatives were in Natal.

And now as to your second query as to the comforts and discomforts of the colony. An emigrant would not think of building a fine house unless he had a superfluous supply of cash. A man with two or three hundred pounds would do well only to put up a hut or cabin of two or three rooms, just to shelter him and his goods until he could set about more permanent work. By people with soft hands this would be considered roughing it, but which old colonists would, of course, treat as a mere trifling discomfort. If an emigrant chooses to rent a farm at once, which can be done on very reasonable terms, he would then have time to look about him for a suitable farm. It is, however, a very bad plan for new-comers, who look to country life for a place to settle down in, to remain long in the seaport of Durban or Murrumbidgee, as the hotel charges would ruin a small purse in no time. I do not think you would feel any great discomfort from the hot weather. The coolies from Madras wrap up here like a Londoner would in the Highlands—Natal is too cold a climate for them. I have felt it quite as hot in London as ever I have felt it here, but the suc-

cession of hot days is, of course, more numerous than in England. I am now about sixty miles from the coast and have found it so cold to-day (February, our hottest month) that I have had to put on an extra coat. There is a long succession of frosty nights here in winter. Hoar-frost is often very thick upon the grass in the villages. I have seen ice half-an-inch thick, and snow six inches deep on the hills within an hour's ride from this place. Fortunately, the summer is the wet season, and the copious rains and thunderstorms refreshen the atmosphere, and make the evenings generally very cool and pleasant. The average yearly temperature is about 60° and the thermometer seldom reaches to more than 90° or 95° in the hottest months—January and February. In winter it is often as low as 34°.

There is a long range of mountains running parallel to the coast called the Drakensberg, about 7,000 or 8,000 feet high from the sea level; these mountains are generally covered with snow during winter. The prevailing winds in winter are from the Indian Ocean in the day time, and in the winter months, immediately after sunset, the wind suddenly turns to the west, off the snowy tops of the Brakensberg. This wind has a very invigorating effect upon the climate, and if you were upon the hills in the face of this wind you would feel as much taste of frost as you would in a north wind in March at home.

From April to the end of September is one succession of beautiful sunshine; seldom a shower of rain falls in all these months. This has often a very charming effect upon the new-comers, as it is so very much at variance with an English winter sleety, sloppy, rainy days. We have, therefore, a comfortable winter, which is a fine season for shooting, as you may be sure. This country abounds with partridges, pheasants, quails, wood-pigeons, pines, wild turkeys, snipes, parrots, rabbits, various specimens of the wild antelope, &c. There is therefore, a comfort in that you can go out at leisure and shoot, and not fear being trapped up by a gamekeeper.

Notwithstanding that Natal is, as far as situation upon the earth's surface is concerned, almost in the tropics, yet it is free from the more virulent forms of disease. From returns of mortality amongst the troops situated in the various colonies, it appears that out of every 1,000 men 120 die yearly in Jamaica, 78 in the West Indies, 48 in the Madras Presidency, 28 in Bermuda, 16 in Malta and Canada, 14 in Nova Scotia and New Brunswick, 13 in the Cape Colony, and only 2 in the thousand in Natal. Consumption is all but unknown here, and even persons who had strong tendencies towards that disease at home do not feel the least inconvenience from it here. The most dangerous diseases in this colony are a kind of low fever and dysentery. These are generally brought on by intemperate habits (colonial

spirits are to be shunned by emigrants), low state of the blood, too much exposure to the sun in hot days, and general neglect of the ordinary precautions necessary to good health in any climate. Small-pox, cholera, and the more infectious fevers are unknown here. Settlers here being mostly men living upon their own estates, and with no one to bind them in their arrangements for their own pleasure, spend a great portion of their time on horseback, either shooting or enjoying themselves in a canter to friends, or a trip into the towns and villages to hear the news, &c.

Very few people here but have horses. It is generally the first outlay, and is a prudent one, as the people in the country are generally so scattered that footing it would be out of the question.

Farmers have suffered a great deal from pleuro-pneumonia, a disease which is very disastrous to horned cattle, but as inoculation is found to be a great preventative of the disease, it will probably die out in a few years. I see from the papers that Australia and New Zealand are also suffering from this curse of the farm. The requirements of the colony are, doubtless, many, but these are being gradually supplied. We have tolerable roads, and the rivers are fast being bridged over. The government are now spending about a quarter of a million in improving and extending the harbour of Port Natal, and we hope in a few years to have a railway from the seaport of Durban to the city of Mantzburg. These two places are improving wonderfully; there are some very fine both public and private buildings, and the outlying settlements are gradually filling up.

What we require more than anything is more white people—capitalists, tradesmen, artisans, and farmers. Young men of the lighter employments, such as clerks, assistants to drapers, &c., are not wanted.

To begin with farming off hand, you would require, say—

10 cows, at £5 each	..	..	£50
8 oxen at £7 each	..	..	56
A cart	..	..	20
Plough and harrow	..	..	10
100 acres of land, 10s.	..	..	50
Oblong hut or cabin	..	..	5
Pigs and poultry	..	..	5

£196

For £100 you would be able to buy 300 acres in some places, if not more; it would buy 500 acres of Crown lands, but then you would have to go a little further from a market.

If a man wishes to go into sheep farming, he should, of course, have a large capital at his disposal. I think, however, it is as well to go to work gradually and surely. I could point to parties here now, after ten years' residence (and who came out with all but empty purses), with their 2000 head of cattle, large troops of horses and mares, flock of sheep, large farms of 3,000

or 6,000 acres, and comfortable homesteads. Farmers will often give a helping hand to newcomers. Artisans can always find employment. Carpenters, wheelwrights, smiths, stonemasons, bricklayers, &c., can earn their ten or fifteen shillings a day.

The price of land varies according to situation; Crown lands are to be bought on freehold for 4s. per acre, but farms may often be bought upon the land sales or long credit, and for a cheap rate. Land in the chief towns is excessively dear, and anywhere within eight or ten miles from them.

The products of the colony are, upon the coast lands, sugar, tobacco, arrowroot, ginger, cayenne pepper, cotton, Indian corn, indigo, &c., &c.; in the way of fruits, pine-apples, bananas, oranges, lemons, nectarines, mulberries, mango, and many others.

In the uplands, wheat, barley, Indian corn, native sugar-canes, potatoes, wool, cotton, most English vegetables, and apples, pears, peaches, lemons, oranges, quinces, Cape gooseberries, pomegranates, and a whole list of others.

As a rule, emigrants ought to bring out with them everything they find useful at home. Do not neglect warm clothing, as well as light, airy clothes, crockery well packed, and all sorts of enamelled wares are very useful in colonies; carpenters' tools, a good fowling-piece and rifle, odds and ends of the utensils of the farm are handy, plenty of shirts, fustian; calico prints and flannels should be brought out.

I am, dear sir, affectionately yours,

D. T.

For the Agriculturist.

SOUTH RIDING OF LANARK COUNTY SOCIETY.

Management of Agricultural Societies, Stock, Seed Wheat, Provincial Exhibition. Professor Buckland, Ottawa.

We would like to know a little of the experience of others in managing their Agricultural Societies, and your journal affords a means of communication.

In South Lanark under able guidance we have some years had good success, and again we have fallen low enough.

Formerly our annual subscription was on dollar, and it required near 270 members, if all paid only \$1 to keep us afloat, and to participate to their full extent in the government bounty. By holding our annual exhibitions in different localities and thus extending the interest to the neighbourhoods, we succeeded well. At this time we distributed monthly some 90 periodicals.

This change of locality had its disadvantages, as we could not have permanent buildings. The Society afterwards chose Perth as its place of exhibition, and put up temporary buildings, but again the interest flagged and our members reduced in numbers.

We have now raised the annual subscription

to \$2 as the minimum. Last fall we had a very successful exhibition and large numbers attended.

One of our mooted points is, the propriety of crop and farm viewing or not. One class of members objects on the grounds that it is unfair to them who have not good farms, and which are broken by rock, stream and lowland, insisting that they cannot successfully compete with their brother members who have fine land, unbroken fields, and where farms are in consequence more regular and better looking to the inspectors. They say the only fair way is by showing in the bag at the annual exhibition. Other parties approve of both methods and would have both the show and the crop viewing. A great deal of warmth has been displayed among the members, and we would like to hear the views of other societies and a little of their experience. We cannot do without the annual exhibition; Can we do without the crop and farm viewing? An opinion from abroad may prove an authority and help us to settle the controversy.

Our societies have at different times brought in bulls, the Ayrshire being the favourite, and some fine grade cattle are the result. But they are only grades after all. In the west where you are so fond of having the Provincial Exhibitions, because you have good ones, our brother farmers have pure breds, their imported Shorthorns, Ayrshires and Galloways. Having done so well and gained renown, and we trust profit, can you enlighten us as to the best mode of introducing pure breeds amongst us by means of our society. We will suppose the farmers either not to be rich enough or unwilling to pay breeders the high prices asked for stock-getters. How shall we proceed? Give us advice or give us a lecture for not being up to the times, —anything to bring us up to the mark. It is clear that females as well as males must be brought in, in order to have pure breds. Suppose the society to be purchasers, we find the expenses of keeping considerable. What is the experience elsewhere? Have you enterprising men, who undertake this duty at reasonable rates, or will it do for the society to purchase and then sell by auction to the highest bidder among the members?

One of our societies has authorized a member to attend a sale and purchase; intending to offer the animals for competition among its members afterwards.

The Ayrshire is the favourite here, both milk and beef being looked for. We have a good farming country and substantial farmers, but the long winter is a drawback. There is a determination to move forward, and if any of your readers can give us advice or direction, we will be the better of it and a little plain speaking does no harm.

Latterly but little fall wheat has been raised. The Canadian Fife has been a great favourite, and might, I think, supply good seed even to the west, if applied for in time. Some brought

in from there, did not appear to be any improvement. The Golden Drop is now attracting attention, and it has been noticed as being quoted a few cents higher a bushel in the western market, than the other variety. Why? Does it yield more and better flour? And can you recommend any other variety of spring wheat to us?

Kingston seems to be fixed as your most eastern point for the annual show. Why not Ottawa some time? Have we no reason to get jealous of our western brethren, and shall we not put in our claims for a little more attention? We wish to bring them all down to central Canada occasionally, in the hope that they will think more of us on better acquaintance. The value of the great Ottawa region, its influence and capacity for agricultural and manufacturing purposes will some day flash in upon the intelligent men of the west. The workers here, if not so far on in their agricultural standing yet as their more western brethren, are nevertheless accumulating influence and means, and will not be much longer in a position to be overlooked in the estimate of the progress of agriculture in Canada.

You are pushing up the flax question and have got your scutching machines, not forgetting to make us *pay* our part of the cost, but it does not appear to have occurred to the managers of the movement, that our Ottawa region was the place to send one of the machines, and that the flax culture could be as well if not better introduced amongst us, then in more favoured regions west. We purposely put in this hint, and wish to send it abroad wide through the columns of your *Agriculturist* and *Journal of the Board of Agriculture of Western Canada*.

Now that a cry to aid the emigrant is abroad, and a desire shown to bring him to Canada, where is he to be *planted* if not in our Ottawa region of country along and inland from this other frontier of our country? The mighty St. Lawrence has had its day, its canals and its railroads, and the future of the Ottawa bids fair to out rival it yet. The judges of the land will soon find it necessary to preside in halls of justice built on the shores of the upper Ottawa, and we trust that the future Boards of Agriculture will have a sprinkling of Ottawa men amongst them. It will be our own fault if this is not so.

Professor Buckland once paid us a visit, but it is long, long ago, and our eyes have not been delighted with any accredited agents of the great agricultural movements of the day emanating from the Bureau of Agriculture or its Boards. But they gather themselves together up westerly and around Toronto, and we go in for reversing the order of things by which the wise men came from the east, and put in a plea for a visitation and recognition from the west.

Other points might be noticed, but this letter is already long enough for the *Agriculturist*.

W. O. BUELL, Prest. of Ag. Society.
Perth, 15th April, 1863.

ON THE BREEDING OF HUNTERS AND HACKS.

Perhaps the best introduction to this paper would be a reference to the prize-sheet of the approaching Exeter Meeting of the Bath and West of England Society, where two handsome premiums appear for "thorough bred stallions best calculated to get hunters and hacks." In a national point of view the good policy of calling more attention to this subject cannot for a moment be questioned, while the duty of doing so comes quite as legitimately within the scope of an agricultural association. All the rest of the world is even more inclined than ever to turn to us for their best cattle or sheep. There is, in fact, no breed of animal that commands so ready a market as a good riding-horse: and yet, strange to say, there is no other branch of business so fortuitously supplied. Saving in Yorkshire Lincolnshire, and parts of "the Shires," the breeding of horses is mere chance work; and the very gentlemen of the district, when they are in want of a promising hunter or clever hack, have but too often to import him from elsewhere. The mere rumour, indeed, of a smartish four-year-old will bring Mr. Oldacre or Mr. Weston some two or three hundred miles specially to look at him; and dealers and their agents now attend our great summer shows as regularly as they do the autumn fairs, just for a glance over the hunting classes, already so attractive a feature in the proceedings.

And yet farmers will tell you that, as a rule, breeding "nags" does not pay; as, under the circumstances, it would be rather a curious thing if it did. As a rule, breeding such stock does not answer, because they are bred without any rule at all. In these days, if a tenant wishes to rear a good beast, he takes especial care to secure the services of a good bull, as with the same ambition he will bid up for a Cotswold shearling or a Southdown ram. If, moreover, he really means to succeed, he will be almost as scrupulous in selecting a dam, and thus provided, he gives the principle he is testing a fair trial. But take the case of rearing a riding-horse, and how does the self-same man proceed? In nine times out of ten "just anyhow." He puts anything he may happen to have with anything that may happen to come in the way. As often as not, he scarcely looks at the horse he uses, but takes the word of some roving blacksmith, or broken down cooper who travels the country with an animal "best calculated to perpetuate the breed" of weeds and screws. Then the foal when he does come, is cultivated much after the same fashion, or, that is, left pretty much to shift for himself. You will see him fighting for his own in the farm-yard amongst a lot of store bullocks, as likely as not with a hip down, or a hole in his side from a playful Hereford, and doing as well as he can on that grand specific, a due allowance of bean-straw. The result of this wonderful system

is surely logical enough. At a year old the young nag is a half-starved, sulky-headed, big-bellied, narrow-framed thing, with most probably a blemish or an eyesore of some sort to complete his personal appearance, and with a general expression and carriage as lively as that of Rosinante, or Doctor Syntax's Dapple. Very naturally, the breeder of such a prodigy is more than anxious to sell him, but quite as naturally can find nobody willing to buy him, until, without heart, mouth, or action—under-bred, under-fed, and half-broke—the butcher gets him thrown in with his next half-score of beasts, or the village apothecary, on the spur on some hapless moment, is brought to believe that the colt may suit him. And thus it happens that breeding nags does not pay—with rather less outlay and attention devoted to such a business than one would bestow on a sitting of Cochon China eggs, or a litter of terrier puppies.

It may be argued fairly enough, that a farmer does not and cannot make the same wholesale business of breeding hunters and hacks as he does of producing cattle and sheep. Still, anything that is worth doing at all is worth doing well, and this might be put yet more emphatically in a pecuniary point of view. There is scarcely an occupier of any position but who has always a goodish animal or two that he jogs round his farm, drives in his dog-cart, or to say it out, rides with the hounds. Let these or some of them in continual succession, be mares that from use, age, or accident, get beyond their work, and what then becomes of them? Their owner cannot sell them, and he will not kill them; so that almost as a matter of course and necessity he proceeds to breed from them. Let us not stay here to inquire whether they be just the sort for such a purpose; but let us, as the initiative, follow out the line of the society, and show our friend that he should do, in contra-distinction to that he too commonly has done. The great improver, then, of his species is the thorough-bred horse; and as a maxim, if you expect the produce of a half or even three parts bred mare to be worth rearing, you must put her to a sire who is as pure-bred as Eclipse himself. There may be occasional exceptions; but these are not to be trusted or taken as precedents. A country mare crossed by a cocktail stallion may now and then throw a good hunter; but we shall generally find that such cocktails are as nearly thorough-bred as possible, and after all, it is safer to keep to the genuine article. I cannot here but congratulate the council of the society on the wording of their conditions for this class, as not admitting the qualification of a half bred horse to get good hunters, or even clever, fashionable hacks. When, certainly, we see a fine powerful three-parts bred horse, with plenty of substance and style about him, a good head, fine shoulders, clean hocks, and so forth, we feel willing enough to have a few more like him. But in this case we have a very forcible illustration of a fallacy of a pro-

verb; for "like does *not* get like" Put the clever three parts bred stallion to the equally clever three-parts bred mare, and can we do so with the assurance that they will reproduce any thing as good as themselves? Most decidedly not. The great point, the very foundation of the personal excellence of the animal we have before us, centres on his being by a thorough bred horse—a recommendation of which his own stock in turn would be as signally wanting. Nothing can be finer, as the experience of our last Christmas shows went to prove, than the first cross between the short-horn and the Aberdeen cow; but what would be the result of crossing these crosses? Disappointment, uncertainty, and a thorough sacrifice of all purity of type either from one breed or the other. A man who went on in this way for generations might eventually do something towards establishing a new variety of breed; but this, with such sorts as the short-horn and polled, already at our hand, will be scarcely worth the time and trouble; and I am not very sanguine of any enterprising individual inventing a better material for making a hunter than that he can get direct from the thorough bred horse. What are the three great essentials of the modern hunter but speed, power, and courage? and where shall we get these but direct from the sire? There is nothing less warranted than the supposition that the English race-horse has deteriorated in strength or endurance. If you begin galloping him at a year and a half old, to wear him out in running and "trying" before he is three years old, and his frame furnished, this is no proof of all he might have been had its powers been husbanded, like those of his ancestors, any of which, under like circumstances, he would have fairly distanced over a four-mile course. *Pace* is now the password of the chase, and the best hunters in Leicestershire, either for fencing, weight-carrying, or stoutness, are and long have been purely thorough bred. These are the horses that make money, and next to these the three parts bred, by a thorough-bred stallion out of a well-bred mare.

But Jonas Webb, even at the acme of his success, called his rams, and many a short-horn that we never see, has, like Brummel's neckcloths, been fastidiously put aside as "a failure." With the thorough-bred horse, however, it is not so; here, unfortunately, there are no failures. Those of the highest degree go to our famous turf studs to serve at their fifty or thirty guineas; others of almost equal excellence are brought up for the foreign market; while many of a similar stamp are put at prices varying from ten to twenty guineas. Such horses are all beyond the farmer's reach; but instead of looking for something in the next degree—and that, without the charge of more fashion or high performance, might well answer the object—our breeder is too often content with the very worst of cast-offs. People who live by travelling stallions are not often men of much capital, and

they go as a consequence more for a cheap horse than a good one. With a flaming card of all a great-grand sire has done, or what this very horse may have accomplished over a short course at a light weight, they associate an animal whose appearance alone should condemn him—narrow, weedy, and leggy, with scarcely a point in his favour for getting hunters, and very possibly full of all sorts of defects, natural and otherwise. The fee still is a small one, and so the mischief is done. A man pays 25s. where five guineas would have been a saving, and the thorough-bred horse gets a bad name, plainly and very palpably, if a customer would only make use of his eyes, from being unfairly represented. Considering the infinity of good or evil they are capable of producing, it is really a question whether horses ever should be allowed to travel without a license, the more particularly when we see how few people take the trouble to judge for themselves. It is sad that every Englishman is either a judge of a horse or thinks he is; but one can scarcely credit this when we find such a number of weeds and cripples year after year earning incomes for their owners. Although nag-breeding may not pay, it is remarkable how many men still continue the unprofitable pursuit.

And now as to the remedy. The notion of encouraging farmers to breed a better sort of horse is by no means a novel one. The offer comes, in the first instance, by way of some recompense for the privilege of riding over their land, or to ensure their good-will for the hunt. Hence we have had Farmers' Plates and Hunters' Stakes, neither of which can be said to have thoroughly answered their object. The so called hunter just "qualified" by showing at the cover-side a few times, and then went back to lead gallops for a Derby favourite, or to vary his performances in the field by winning a Royal Hundred. The Farmers' Purse, given by the gentlemen of the Hunt, has been often enough still further from its original intent. A sporting inkeeper or a hard riding townsman would just "qualify" again, by taking the requisite number of acres of ground, and bargaining for a plater in due time previous to the race coming off. Then, by the aid of a *quasi* gentleman rider who could sit still at a finish, the "*bona fide* farmer" Boniface would pocket the purse, as the donors looked on year after year in glum disappointment, murmuring occasionally to each other that this was not exactly what they meant either! Perhaps, however, next to losing, the most unfortunate thing that could ever happen to a real tenant farmer was to win one of these same Farmers' Plates. It has given more than one man of my acquaintance his first taste for the turf: another result as little intended by the founders of the prize. But, let the members of the hunt not yet altogether despair of what they may do in this way. Of late years the purse has taken a far more popular form, and in place of being contested as a plate on a race-course, it is

now offered as a premium on a show ground. To the growing interests and success of such a system I have already spoken; but we have scarcely yet got so far as the show-ground. Before we venture into public, we must see if we cannot set to work, and breed something fit to place before the judges. And here, too, the hunt may help us. Let it be admitted that, in a free country like this, the licensing would hardly be practical, and that any man may still "travel" any brute he chooses. Surely the fitting way to meet him will be to start a better horse in opposition. Let the master and the managing committee of the county fox-hounds make it part of their business to see that the district is never without the command of a good, sound, thorough-bred stallion, "calculated to get hunters and hacks." Let such a horse, if necessary, be even the property of the hunt, to stand at kennel stables; and let him, moreover, serve farmers' mares at a certain moderate figure. Never, however, under any circumstances, let his favours be given gratis; for people are very apt to estimate that which they get for nothing at what they pay for it, and such a practice would only tend to make men more careless over a matter which they are only too indifferent about as it is. The principle I would here recommend has already been tried. It was only within the last year or two that I was staying with a friend on the borders of Shropshire, who was then looking out for another stud-horse for the country, as they had just lost the one they had been using for some seasons. Baron Rothschild, who hunts the vale of Aylesbury so handsomely, takes especial care that a thorough bred one is ever within the graziers' reach at Mentmore; and the Duke of Beaufort has now always a stallion, which serves mares within the boundaries of the Badminton, at a trifle over a merely nominal figure. I had the honour last autumn of awarding his Grace's premiums for the best yearlings by his Kingstown, as well as for the best mare with a foal at her foot by the same horse, when the following suggestive incident occurred. The prize for the yearling went to a really blood-like filly, with fine, free action to back her appearance. In the course of the morning I was accosted by her owner, a perfect stranger, who after a word for the young one, added, "But you would not give her mother a prize, sir." I did not know that I had ever had the opportunity of doing so, until my new acquaintance explained to me that she was in the brood-mare class, acknowledging at the same time, "I know why she did not get it; she is not quite well-bred enough, nor active enough to be either first or second of her order; and that wonderful nick with the thorough-bred horse had done it all—a fact which even a possibly partial owner saw as plainly as I did.

This brings me to another branch of my subject. Having secured the use of a good, promising horse, let us as early as possible go on to prove him. The four-year-old hunting class is

the favourite one at our agricultural meetings; but I am not quite sure but that the yearling and two-year-old classes are not more advantageous in their effects to the breeders. In the first place, if a man has a tolerably good-looking foal he may begin to keep him rather better than I fear many farmers are inclined to, if he thinks of exhibiting him as a yearling. Then, if he so chooses, this said exhibition may be something of a market. It is not every man who has the time or ability to "make" young horses; and there is always some risk in breaking, and so forth. A fair offer should consequently seldom be refused, especially if it comes at an early period in the colt's career; but this is a part of the business, again, that agriculturists are scarcely up in. If they have a good-looking young one they are terribly apt to overstay their time with him, and to keep him about home until he gets thoroughly blown on. A dealer has the opportunity of shifting a staymaker that no farmer can possibly command; and even further, this "making" of a hunter of a very necessity implies a deal of knocking about. A friend of my own once refused an offer of between two and three hundred guineas for a prize two-year-old from a neighboring master of hounds, only to keep him until, from a series of mishaps, the chestnut horse became almost unsaleable, and never afterwards worth a fifth of what was bid for him. Others will become yet more enamoured with their own, and turn all their geese into ganders. Such a man will look at his colt until he finds him to be too good either to ride or to sell; and the coarse, fleshy, cocktail country stallion is the consequence. His owner's immediate influence in the neighbourhood is sure to get him some mares, and as he has never done a day's work in his life he is possibly free from any very visible strain or blemish a point that is equally certain to be made the most of. It is almost needless to say that the presence of such a stallion does infinite injury in a district; and if the weedy thorough-bred should not travel without a license, it would be advisable to put down such an animal as this other one by act of parliament. Some gentlemen without any of the direct call of the M. F. H. will offer their friends the example of a proper model of their own free will. An enthusiast like Mr. Pishey Snait, with a horse so well selected as old Theon—Captain Barlow, with Robinson replaced by Middlesex—and, I must add very appropriately here, Captain Watson, with the Bishop of Romford's cob, followed by Hungerford—must inculcate a most useful lesson in their several districts. Theon did wonders in this way about Boston; and, despite their vicinity to the capital of the turf, the farmers of Suffolk, until within a very few years back, were quite willing to try and breed a hunter "anyhow," and from anything that came in their way. The improvement, thanks to the opportunity at Hasketon, I can say, from personal observation, is very remarkable; while the Devonians must know bet-

ter than I can tell them how much they in turn owe to the Dorsley Stud farm, which I had the pleasure of inspecting a year or two since. I have also seen the Beauties of Mamhead, where a similar principle is upheld; for though the illustrious Gemma di Vergy may be beyond our reach, I am glad to hear that since I was there Sir Lydston Newman has provided a second horse with such good stout blood in his veins as the Dupe, who will, no doubt come within the farmer's figure.

It will be gathered that the point of this paper is a reliance on the use of the thorough-bred horse for improving our breed of hacks and hunters. Other crosses, with the *sine qua non* of purity on one side, are of course available, such as putting the cart stallion on to the blood mare; but these extremes rarely meet or "nick," and are not to be recommended. A better plan would naturally be to associate the thorough-bred dam with the cocktail sire; but this, so far as the tenant-farmer is concerned, is practically impossible. It would require far too large an outlay to buy in the stamp of running mares fit to breed hunters from, and we must be content with what I believe, after all, to be the very best means for the purpose. No animal leaves a stronger *imprimatur* of himself than the race-horse; and though he may not be big and bulky, he will often throw back to more size and power. The cross put the other way is not common, neither can I remember any such striking examples of its success as, even if possible, to warrant its more general adoption. Nearly all our best steeplechase horses, if not themselves quite thorough-bred, have claimed thorough-bred sires; and I may cite an example in this way that came personally under my own observation very early in life. My father had for many years in his stud a thorough-bred mare called Pintail, by Pioneer, that, just towards the close of her career, threw that famous steeplechase horse, "The British Yeoman," by Count Porro. Her previous produce, however, had been anything but superior, and as a chance for imbuing them with a little more stoutness and substance, she was put one season to a good-looking three-parts-bred stallion that was travelling in the district, the result being unquestionably the veriest weed of the whole family. As for the Yeoman himself, light, wiry horse as he was, nothing but his pure lineage could have carried him through dirt and under weight in the way it did.

To be continued.

AWARD OF PRIZES TO CATTLE AND SHEEP BY POINTS.

SIR, I was much pleased some years ago with a pamphlet which described the plan adopted in the Channel Islands of awarding prizes to cattle by the greatest number of marks, according to points, and it has occurred to me that if such a plan were adopted by the Royal Agricultural Society it might prevent a recurrence of the

dissatisfaction at the award of prizes at the late Battersea Show, both as regards cattle and sheep; for, independently of the fault that was then found with the first prize short-horn aged bull, and the first prize Leicester shearing ram, they have both proved unworthy the distinctions they have obtained, by the opinions shown (by breeders) when they were put up to public sale, and also by the disgraceful figure the shearing ram presented at the Warwickshire Show at Birmingham. Prize animals ought to be perfect models for breeders to copy, and not like the short-horn bull with too weak a middle piece to tie his quarters together, nor the Leicester ram, whose defects were too numerous to mention. Enclosed I submit to the attention of Leicester breeders a list of the necessary points for a Bakewell Leicester, with their appropriate value, in the hope that more able judges than myself may take the matter into consideration to suggest alterations and improvements to the plan:—

Head	2	Belly	2
Neck	2	Leg of Mutton	4
Collar	2	Rock joint and hind legs	2
Blades	3	Flesh	6
Chines	3	Wool	4
Back	3	Symmetry, namely, straight	
Loins	2	line from back of poll to	
Hips	2	near the rump	3
Rump	2	Girt at back of foreleg,	
Shoulder kernel	1	close to elbow, so great	
Outside shoulder	1	that the hind quarters are	
Setting on and form of fore-		hidden when facing the	
legs	2	sheep	6
Width and length of breast	3	Size with symmetry	5
Depth of rib	2		
	—		63

Twenty-three points, sixty-three marks.

A sheep possessing any one of the following bad points should be excluded by the judges, however good it may be in its general points:—

1. Want of girt at back of elbow to make its fore hide its hind quarters.

2. Bad neck.

3. Badly placed blades.

4. Deficient chines.

5. Bad leg of mutton.

6. Narrow breast, with badly placed forelegs.

7. Deficient wool.

I shall feel much obliged if you will favour me by inserting the above remarks in your next *Messenger*. I am, sir, yours, &c.,

J. G. WATKINS.

Woodfield, Droitwich,—*Bell's Messenger*.

STEAM CULTIVATION.

The question is asked—How small a farm may profitably be worked by the steam plough? Probably the right way to answer it would be to consider how large a capital may be profitably employed on any farm in question. Considering the facilities for disposing of its produce, and the best possible mode of turning its productive powers to account, what is the sum which may be the most profitably employed in its cultivation? This would decide the question

whether such an addition to the capital employed upon a farm as steam cultivation necessarily involves is consistent with farm profits.

But there is another point which materially affects the answer such a question should receive; for, supposing it determined that steam cultivation shall be adopted, its profitability or otherwise depends more than any other thing on the possibility of working the apparatus pretty constantly throughout the year. We know of one example where 30 or 40 working oxen have been dispensed with by the use of a 10 horse power engine in cultivation, and where, therefore, unquestionably a direct saving has followed its adoption. This is where the soil is so dry and easily worked that, except when heavy rain is actually falling, or the land is covered with snow or bound up in frost, the cultivator could be kept constantly employed throughout the year. In other cases we know of the engine having been employed in cultivation with a comparatively small displacement of animal power, and where, nevertheless, the tenant is perfectly satisfied with his enterprise. This, on the other hand, is where the soil is so stiff and difficult to work that the advantage is derived especially from the superior quality of the work accomplished on it. There is a limit placed upon the diminution which steam tillage effects in the horse power of the farm by the quantity of other work—carriage, &c.—which remains to be done. Where a great deal of this has to be accomplished, as in a case we know of, where 30 or 40 acres of mangel wurzel are carried to the homestead every winter, and where 20 loads of dung per acre upon, perhaps, 80 acres of a farm of 200 acres have been carried from the homestead every winter—where the market town is 14 miles off, and so on—it is plain that, taking the work of the farm alone into account, it will not pay to procure the services of a steam plough, except by way of hire. This the tenant has done to his great advantage, as he believes, notwithstanding that he has paid from 10s. to 20s. an acre for its work, together with all the coals consumed in the operation. He had 40 acres of wheat stubble ploughed in this way with Fowler's apparatus last year, and notwithstanding that we have known the farm all our farming days, ever since, 20 years ago, it was broken out of grass, yet we have never seen a better crop of mangel wurzel, swedes, and turnips than there is upon those 40 acres now. Another quarter of the farm had been steam ploughed the previous year, where turnips had been fed off and where mangels had been drawn, and first-rate crops of barley, wheat, and oats had been taken. The seeds sown with the two former crops had yielded more green food and hay over 30 acres than the tenant had previously known upon the whole 200 belonging to that quarter of the estate. The oat stubble, which, being somewhat foul, had not been sown with clover, was ploughed by steam last autumn, and a crop of peas, the like of which was never

seen upon the farm before, was grown there this year. The tenant declares that the straw was 8 feet lying, and podded more heavily than any stuck peas in a garden; he fully expects 8 quarters per acre. It is certain that he has found it profitable to hire the steam plough, notwithstanding the heavy charges for it. And indeed, notwithstanding the limited extent of the land in his occupation, he would did the means at his disposal allow his doing so, purchase the apparatus, even for the 200 acres of plough land to which he is confined.

A farmer must have horses enough to do the carriage of his farm; and he must have horses enough to work a drill and do the harrowing before and after it. To be sure, Mr. Smith, of Woolston, has a combined cultivator and drill which is worked very efficiently by steam power. But apart from this, the sowing of the land, its harrowing, and the carriage of manure and produce will generally remain to be done by horses. Let any tenant consider how many horses he may dispense with, retaining enough for this, and he will soon learn what saving will be made by the adoption of steam culture. To that he must add whatever advantage he may obtain by letting out his apparatus on hire, and far more than this, the advantage which, especially if his land be stiff and clayey, he will derive from the superior quality of the cultivation done by the steam-driven apparatus; and he will then be able to determine for himself the probability of steam cultivation answering his purpose. Fowler, Smith, and Howard all compete on very even terms as to mere cost of apparatus for the custom of the really small arable farms, to which steam cultivation is thus profitably applicable; and, without attempting to state the precise circumstances under which a given acreage will or will not yield a satisfactory interest upon an investment in steam cultivation, it seems plain that a much smaller extent of arable land will in most cases pay for the expense than is now generally imagined.—*Agricultural Gazette*

THE VINE LANDS OF LAKE ERIE.

On a pleasant afternoon, last week, we took a drive through the sand region which skirts the city of Cleveland on the east and south; and were struck by the evidence, on all sides, of the increase of the Grape Culture. Scarcely a farm, homestead, holding of any sort, be it a few rods, a few acres, or a larger farm, but exhibited evidences of new, or increased, attention to the cultivation of the grape. Without the public specially noting it, the portion of Cuyahoga county immediately surrounding this beautiful Forest City, is fast becoming a continuous vineyard. The grape crop is proving a sure and lucrative one; and land owners are not slow to note and profit by the fact. The experience of the vintners of Kelley's Island, proving that the

lake region is almost if not quite free from all the drawbacks of blight and frost, and the other evil which occasionally try the patience of the vintners in Southern Ohio, has had its influence here;—but there is yet another influence to which due credit should be given. Settled in and around the city is quite a large population of Germans; and hardly one of them who possesses a rod of ground, but has a grape vine, well trimmed and trained, and annually filled with the laughing fruit. The success of these children of the “Fatherland” has taught a lesson to the Yankee element—an element quick to grasp at any idea that has success marked or indicated upon its features;—and the consequences bids fair to be a continuous vineyard in city, suburbs and country, to the outermost skirts of the warm sand soils of the Cuyahoga.

This grape fever—a very healthful disease, we hold—is not confined to the Cuyahoga region. We have already alluded to the extension of the culture on the Islands above us; and our cotemporary of the Sandusky *Register* notes that tens of thousands, perhaps hundreds of thousands of cuttings are going into the ground about that city; and the epidemic, it says, “is sweeping all over this region and involving land holders and cultivators alike. Large quantities of land are being divided up into small parcels and sold out for vineyards. The whole peninsula over the Bay, is becoming involved, and the Islands and main land alike feel the impulse of the epidemic. With a good crop of fruit this season, another year will witness a great increase of the fever. We know no reason why there should not be a good crop, but there will doubtless be failures in the future. With the impulse that the grape culture now has, there will neither be that care in selecting land for grapes, in preparing it and in cultivating and tending the vines, necessary to insure uniform success—even if general success should remain the rule. The reckless, the careless, the slovenly and the negligent will be pretty sure eventually to fail—as they would fail in almost everything else.”—*Ohio Cultivator*.

SCOTCH FARMING IN THE OLDEN TIMES.

The first of the “Fordyce Agricultural Lectures,” delivered at Aberdeen in Scotland last month, was devoted to a review of the history of Agriculture in that country. Parts of this history are instructive here: for there are some features in the Scotch farming of last century to which our own farming now bears too great a degree of resemblance. The internal confusion and wars that raged so long, left the country in a wretched condition, and it was not until about the year 1782 that many signs of improvement began to be visible.

“Up to that period it was the practice to divide the arable land of each farm into what was called *infield* and *outfield*. The infield, or

intoon as it was sometimes called, was that part of the ground which lay nearest to the *toon* or farm-steading, and usually consisted of about one fifth of the arable land of the farm. As draining was little known or practiced in those days, the farm offices were pitched in the drier spots of land, often upon the top of some eminence or little hill. This infield land received most of the manure, all, in fact, that was made at the steading, and was likewise further replenished from time to time with earthy stuff, brought from the mosses and places. It is generally said to have been kept under a continual course of crops, although this, I think, can hardly be true, and was generally manured every third year; the dung being applied to the bear, after which came two crops of oats. A good deal of bear, or barley, was cultivated in those days for making malt, and much smuggling of whiskey and illicit distillation was practiced in some of the more secluded districts. The perpetual cultivation and frequent manuring which the infield land received, had the effect of giving the soil a dark colour and friable loamy texture, but it was quite overrun with weeds, which sprang up freely under such a system of management, little attention being paid to cleaning the ground in those days. Spurrey, or *Yarr* as it is here called, used to be so great a pest that in some seasons the corn was completely choked by it. The *outfield* land, which formed by far the greater portion of the farms, was managed upon a different plan. A good deal of it consisted of what was called *ri*, and *baulk*. The baulks were wide spaces between the rigs or ridges, from which the soil had been gradually carried off by continual gathering up the ridges. So that the ridges had not only their own soil, but also that of the baulks or intervening spaces which were thus left bare, and grew no crops whatever. Any large stones or boulders that infested the ground were usually rolled into these baulks to be out of the way. Successive crops of oats were taken off this outfield land as long as they could grow. After three or four, they scarcely returned more than the seed, and they were then allowed to rest. That is to say, they were abandoned and left to cover themselves with such weeds and grasses as their exhausted nature were capable of producing. Thus they lay for perhaps five or six years, and they were again ploughed up and subjected to another series of crops.

“The outfield land usually consisted of two divisions, called *fualds* and the *faughs*. The fualds or folds were about half the extent of the other, and generally were divided into ten parts, one of which was ploughed up every year. Before this was done, it was enclosed with a turf wall and the cattle folded up during the night and for a few hours at noon. In this way a good deal of dung was left upon it, which served to recruit its exhausted powers

and enabled it to produce better crops. The *faughs*, on the other hand, got none of this beneficial treatment, and received no manure of any kind. When broken up, it was by the method known as *rib-plowing*, which was then called *faughing*, and hence the name applied to this ground."

In those days, "carts being scarcely known, the dung and peats were carried in creels, and the corn or meal in sacks laid across the horse's backs."

The rent was largely paid in kind, so many "wedders, lambs, poultry, &c." The results of the kind of cultivation described, are still perceptible in the condition of the land. The sterility of some fields is plainly to be ascribed, not to any lack of fertility, but to the exhaustion of the ancient outfields, or to the abstraction of the soil from the "baulks." The old "intoon" land, on the other hand, is still considered the most valuable of all; and it is interesting to observe," said the speaker, "that the continual cropping it underwent does not seem to have at all impoverished it, owing to the abundant supplies of manure with which it was so frequently replenished. In point of fact, the result of the farming system in those days was to enrich the infield at the expense of all the rest of the farm. These infield portions were of comparatively small extent, forming, as it were, crofts around the farm houses. When new crops were introduced, and these bits of intoon land were cleared of weeds, stimulated with lime, and sown for the first time with turnips or grasses, they yielded most luxuriant and abundant crops; instances occurred of upwards of 470 stones of 22 lbs. each (say 5 tons) being got from an imperial acre of ryegrass in the finest places. A crop of this amount was actually measured and weighed on a quarter of an acre, on the farm of Monkshill, in Buchan, in the last century—the coles being taken when dry and ready to go into the stack, the weather having continued fine from the time of cutting. The ryegrass in these cases was uncommonly strong in the stalk, and bore up the crop without lodging badly. Most of it was about $3\frac{1}{2}$ feet in length; but in some of the moister portions of the field, where it continued to grow longer, some stalks of it measured 6 feet 2 inches. This was the *Lolium perenne* or common ryegrass."

May we not learn from this bit of agricultural history, a new lesson of the efficacious results of the careful and liberal application of manures? The better farming of fourscore years has not yet sufficed to obliterate the traces of the once prevalent negligence of the farmer, where he did little or nothing to replace the crops he harvested; and where fertilizing materials were put on, continued cultivation during the lapse of the same eighty years, has only served to increase, rather than diminish, the productive effects of their regular employment.—*Country Gentleman*.

GYPSUM AS A FERTILIZER.

To the Editor of the *Canadian Agriculturist*.

SIR,—I would feel much gratified were you, through the medium of your valuable periodical, to set at rest a question that has been agitated here respecting the properties of Plaster of Paris. Some are of opinion that it is advantageous only in the production of *one* crop, whilst others contend that it is beneficially productive in a *succession* of crops. You, Mr. Editor, or some one of your numerous correspondents, who have tested the growing qualities of this fertilizer, might be able to give us information upon this subject; by so doing you will very much oblige.

Yours respectfully,

JAMES TORRANCE.

Goderich, June 21, 1863.

REMARKS.—We scarcely feel ourselves competent "to set at rest" the question which our correspondent has proposed. The action of plaster, both in this country and in Europe is often attended with peculiar difficulties, alike to the scientific chemist and the practical farmer. In some localities its application produces no sensible effects whatever, while in others the results are of a most striking character. Along the sea coast it produces generally little or no effect, while in situations remote from oceanic influences its fertilizing power is quite marvellous. As a sulphate of lime it supplies to plants two important ingredient,—sulphate and lime—which some soils do not possess in sufficient quantity. But it would also appear that gypsum acts beneficially in attracting moisture from the air, and in fixing ammonia and other gaseous bodies floating in the atmosphere, and in bringing them within the available requirements of growing plants. The small quantity usually applied as a top-dressing in spring, to clover, &c., although frequently attended by marked effects on the first crop, can produce, we should imagine, but little influence on the second. But when larger quantities are applied, as is sometimes done to the hills of Indian corn, the effects are frequently visible, within their limited areas, in the succeeding crop. We should be happy to receive a statement of the views and experience of practical farmers on this subject.—[Eds.]

Agricultural Intelligence.

MEETING OF THE BOARD OF AGRICULTURE.

A meeting of the Board of Agriculture took place at Kingston, 23rd ult., at 10 a. m., at the British American Hotel. The Board commenced its session

AS COUNCIL OF THE AGRICULTURAL ASSOCIATION, The following members being present:—Messrs. E. W. Thomson, President; Wm. Ferguson, Asa A. Burnham, R. L. Denison, Hon. H. Rutan, Professor Buckland, and Rice Lewis, Vice-President of the Board of Arts.

Letters were received from the following members, regretting their inability to attend (the present meeting, viz.: Hon. Mr. Christie, owing to urgent business; Dr. Richmond, personal illness; Dr. Beatty, illness in his family.

The minutes of the previous meeting were read and approved.

The following communications were submitted by the Secretary.

From Mr. Geo. Prentice, of Whitby, expressing his dissatisfaction with the mode of testing the ploughs at the Provincial Exhibitions, and suggesting some improvements.

From Mr. S. Fairbanks, of Whitby, suggesting that the Council should use its influence to endeavour to procure a law to compel every one keeping a stallion for hire, to pay an annual license of not less than \$40 for the same, in order to prevent the breed of horses being deteriorated by the use of very inferior stallions at a low charge.

From Hon. A. J. Fergusson Blair, M. L. C., stating his wish to continue for this year the "Fergus Cup" given by his father, the late Hon. Adam Fergusson, for the past two years.

From Mr. J. E. Pell, accepting the appointment of Superintendent of the Arts Department of the Exhibition.

From Thos. Wilson, Esq., Secretary of the Kingston Electoral Division Society, requesting to know whether family tickets for the Provincial Exhibition would be furnished by the Association to the members of that Society on the payment of \$1 for each member.

From Mr. H. K. Parsons, of Guelph, in reference to the judging of Cheeses at the Provincial Exhibition, requesting that care may be taken to appoint judges thoroughly acquainted with the different kinds of that article.

From Mr. W. A. Cooley, Ancaster, agreeing to continue to act as General Superintendent of the Exhibition.

From Mr. J. B. Aylesworth, Secretary of the County of Addington Agricultural Society, stating that that Society had resolved to hold no show for the current year, but to give their funds in aid of the Provincial Association.

From Mr. D. W. Beadle, St. Catharines, stating it to be his intention to assume the offer of Prizes made by his father, the late Dr. Beadle, for Pear Culture, and requesting that the same should be inserted in the Prize List.

From the Secretary of the Lower Canada Board of Agriculture, dated May 28th, requesting to know what action the Council proposed to take in reference to the Exhibition, in view of the funds not having been voted by Parliament.

From the Hon. Mr. Alexander, of Woodstock, dated June 17th, suggesting for consideration whether it is expedient to give the same amount of prizes for sheep in the classes in which the competition is very limited, as in those in which the entries are numerous; also stating it to be his intention to move a resolution to prevent the Exhibition being infested with gambling tables, &c.; and suggesting the holding of a meeting, on Thursday evening of the Exhibition week, by the Delegates, to discuss any matters affecting the interests of Agriculture.

From Mr. I. H. Anderson, of West Flamboro, dated June 19th, offering an explanation of circumstances which occurred at the Exhibition of 1861, in consequence of which the Canada Company's prize was withheld from his wheat after being awarded to it, and requesting to be again permitted to become an exhibitor at the Provincial Exhibition. In this explanation Mr. Anderson alleged that his wheat had been maliciously mixed with impurities by another party, after being brought into the Exhibition Building.

From Dr. Beatty, suggesting some internal arrangements of the Exhibition Building.

The following motions were then agreed to:

Resolved,—That this Council employ a team and ploughman to try the ploughs entered at the next Provincial Show, and that the decision of the Judges be given on the trial made with such team and man only, and in no other way.

Mr. Fairbank's communication on the subject of stallions was referred to the general meeting on one of the evenings of the Exhibition week.

The thanks of the Council were voted to the Hon. Mr. Fergusson Blair, for his liberality in continuing the "Fergus Cup."

Mr. Wilson's letter, in reference to the Kingston Electoral Division Society being considered, it was decided that the practice of giving family tickets having been discontinued for many years it could not be revived under any circumstances.

Mr. Parson's letter on cheese was referred to the committee for appointing judges.

Hon. Mr. Alexander's letter being considered, the suggestions on sheep were referred to the Committee on next year's Prize List; the Secretary was instructed to request the attention of the Local Municipal authorities to the suppression of gambling tables and

similar nuisances at the Exhibition Grounds as much as possible; and it was *Resolved* that arrangements should be made for the holding of meetings for discussion on the evenings of Wednesday and Thursday of the Exhibition week.

Mr. Anderson's letter being considered, it was *Resolved* that his request to be again admitted as an exhibitor cannot be acceded to this year.

Resolved,—That the Judges for the Exhibition be appointed in the same manner as heretofore for the Agricultural Department, by requesting the County Societies to nominate competent persons for certain classes, and the Board selecting from such nominations such names as may be necessary, and that a committee be appointed for the purpose, consisting of the President of the Board, the President of the Association, Professor Buckland, and Mr. Denison; and the judges for the Arts Department be appointed by the Committee of Boards of Arts.

Resolved,—That the President of the Association be requested to communicate with His Excellency the Governor General, and such other distinguished persons as he may think proper to include, inviting them to visit the approaching Exhibition.

On motion Dr. Beatty's letter in reference to internal fittings of the Building was referred to the Local Committee.

Resolved,—That Messrs. Thomson, Burnham, Christie, Ruttan, Buckland, and Denison, be authorised as Delegates to the New York State Show at Utica in September next; and Mr. Fergusson, Dr. Richmond, Dr. Beatty, and the Hon. Mr. Alexander, to visit the Lower Canada Provincial Exhibition at Montreal, taking place at the same date.

Moved by Professor Buckland, seconded by Mr. Lewis, and

Resolved,—That a public trial of Mowers, Reapers, and Ploughs, be conducted under the direction of the Board at the most suitable period next summer, at which the awards of the Provincial Exhibition shall be given, on the condition that all prize implements shall be exhibited at the Provincial Show.

On motion the Secretary was instructed to make arrangements for getting Posting Bills of the Exhibition printed and distributed.

The Council then adjourned at 12 o'clock to 3 p. m., then to meet and join the Local Committee at the City Hall.

AS THE BOARD OF AGRICULTURE,

The Board met, at 12 o'clock, noon, Present: Messrs. Thomson, Fergusson, Burnham, Denison, Ruttan, and Buckland.

The following communications were submitted:—

From the Bureau of Agriculture, dated 27th Feb. 1863, stating that the following gentlemen had been elected members of the Board,

viz.: Hon. David Christie, Wm. Ferguson, Esq., Asa A. Burnham, Esq., and Dr. Richmond.

Copy of letter to the Hon. Mr. Eventure, Minister of Agriculture, in accordance with instructions at last meeting of the Board, applying for the 2½ per cent. which had been withheld from the Agricultural grants in 1862, for purposes of agricultural instruction.

From the Secretary of the East Riding of York Agricultural Society, in reference to receiving the Report of York Township Society, a part of such Township being in the East Riding, and a part in the West Riding of York.

From Mr. Henry Strickler, of Waterloo Township, to whom the Flax Scutching Machine belonging to the Board had been lent, reporting favourably in regard to the working of the machine.

Telegraph messages from the Bureau of Agriculture, received by the Secretary in February last, asking for returns of the harvest of 1862, and also a letter of a later date acknowledging the receipt of such report as the Secretary had been able to forward from the materials at command. These communications were submitted with the view of eliciting the opinion of the Board, as to the propriety of adopting measures for annually obtaining complete and reliable agricultural statistics as soon as possible after harvest.

A letter from Mr. Chamberlin, Secretary of the Canada Commission for the International Exhibition at London, 1862, accompanying specimens of many varieties of seeds, which had been shown at that Exhibition from different countries, and now forwarded for distribution to Upper Canada contributors to the same of grains; also, letters from parties amongst whom these seeds had been distributed, acknowledging receipt of the same, and promising to experiment with and report upon them.

From the President of the County of Grey Agricultural Society, desiring to be informed whether the Mount Forest Branch Society, consisting partly of members residing in the County of Wellington, and holding their exhibition within the County of Wellington, is entitled to a share of the Government Grant from the County of Grey Society, in proportion to the number of members.

From Mr. C. Knowlson, of Peterborough, calling in question, at considerable length, the soundness of the principles upon which the Agricultural Societies of the country are organised and supported by Government, and imputing to some societies, especially in the County of Victoria, gross abuses in the management of their affairs, and suggesting the necessity of due enquiry into the subject.

From Messrs. Wrench & Sons, Seedsmen, London, England, with excellent samples of

wheat and other seeds, exhibited by them at the International Exhibition of 1862, and now forwarded for distribution.

From Mr. Jas. J. Ryan, Secretary North Hastings Agricultural Society, desiring to be informed whether the Townships of Hungerford and Huntingdon could be united for the purpose of forming a Branch Agricultural Society in opposition to the wishes of the latter township.

From Messrs. Austin Baldwin & Co., New York, Agents for the Hamburg International Agricultural Exhibition, taking place in July, 1863, several letters, printed circulars, and other documents, requesting the co-operation of the Board in the objects of the Exhibition.

From Mr. C. Sibbald, Brockville, with a sample of exceedingly fine wool, from the Negretti sheep, in Pomerania, Prussia, sent out by a gentleman from that country, with the view of ascertaining the adaptability of the breed to Canada.

From the Treasurers of several Agricultural Societies, desiring to be informed how soon the Government Grant to such Societies will be available, and what will be the amount of the same.

From Mr. Richard Chaloner, Secretary of the Mount Forest Agricultural Society, enquiring as to the efforts of the County of Grey Society to exclude the Mount Forest Branch from the full benefits of the Government Grant, on account of the latter Society consisting partly of members from the County of Wellington.

[The Secretary stated that he had replied at length to this communication, and that from the County of Grey Society, as well as to the enquiries from the North Hastings Society, stating the requirements and limitations of the law in each case.]

From Mr. F. Shanly, lessee of the buildings and grounds lately occupied by the Board as an experimental farm, asking for a certain deduction of rent, on account of repairs and improvements made to the said buildings.

From Mr. John A. Donaldson, of Weston, urging upon the Board the great importance to Canada of promoting the cultivation of flax as a staple crop, and soliciting the influence of the Board in advancing the same. This letter was accompanied by a very superior specimen of raw flax, of nearly mature growth, just pulled from a field in Whitby, and also another sample from Mr. Mitchell, of Norval, of equally good quality, testifying strongly to the adaptedness of the soil and climate to this article of produce.

From the Bureau of Agriculture, Quebec, stating that the grants to the Agricultural Societies would take place at an early day.

From Hon. Mr. Christie, urging the importance of completing the arrangements for the publication of the Canada Short Horn Herd Book.

From Messrs. W. C. Chewett & Co., Toronto, an estimate, obtained in accordance with instructions at last meeting of the Board, of the cost of printing and binding the Herd Book.

From Mr. Denison, as Report of Committee, a rough draft of plan of fittings for the Museum in the Agricultural Hall.

The Board then adjourned to 7 p. m.

MEETING OF THE LOCAL COMMITTEE.

At three p. m. a meeting of the Local Committee took place in the City Hall, according to appointment, the Council of the Association being present as ex-officio members. The Secretary of the Committee read the minutes of the past proceedings for the information of the Council, and several tenders were opened for additional works required on the exhibition grounds. The Committee then proceeded to the grounds, and examined fully the preparations for the Exhibition, which were found to be in a satisfactory state of forwardness and completeness. The Committee then adjourned.

THE BOARD OF AGRICULTURE.

At 7 p. m., to which hour the Board had adjourned, there not being a quorum of members present, an adjournment took place to next morning at 10 o'clock.

FRIDAY, July 24th, 10 a. m.

The Board met this morning, according to adjournment.

Present: Messrs. Thomson, (President), Ruttan, Denison, Burnham, Ferguson, Buckland.

Minutes of yesterday were read.

Resolved,—That a sum not exceeding Two Hundred Dollars be appropriated by this Board to be expended in preparing and fitting up the Museum in the Agricultural Hall, at Toronto, and that the following Committee be appointed for that purpose, viz.: The President of the Board, Professor Buckland, Mr. Denison, Mr. Ruttan, and Mr. Burnham.

Mr. Donaldson's letter on the subject of Flax Culture being considered, it was

Resolved,—That Mr. Donaldson's efforts in promoting the culture of flax entitle him to the thanks of this Board and of the country at large, and the Board will willingly do all in its power to forward any feasible plan that may be proposed by Mr. Donaldson with the view of attracting the attention of Agriculturists to the advantages of devoting a portion of their farms to the cultivation of this product.

In reference to the samples of flax submitted it was also

Resolved,—That the Board desires to express its satisfaction at observing the excellent samples of flax, the growth of this year, submitted by Messrs. Donaldson & Mitchell, as an evidence, if evidence were necessary, of the fitness of the soil and climate of this country for the production of this article,—The Board

trust that the culture of this crop will receive the attention from farmers of which it is worthy, and feel convinced that flax may be made a most important article of export from Canada.

Resolved,—That so soon as a sufficient number of the cattle breeders throughout the country, and of the County and Township Agricultural Societies in the Province, shall each bind themselves to take a copy of the Herd Book of Canada Short Horned Cattle, this Board will undertake to publish such a work, and offer the same at a reasonable price, probably not exceeding \$3 per copy.

Mr. Knowlson's letter on the subject of the organization and management of Agricultural Societies generally, and particularly in regard to the Societies in the County of Victoria, having been considered, it was

Resolved,—That as certain abuses stated by Mr. Knowlson to prevail in the management of the affairs of the Agricultural Societies in the County of Victoria appear to be altogether of a local character, the remedy appears to the Board to lie in the hands of the intelligent and influential individuals residing within the limits of each Agricultural Society, and the Board recommend united efforts to dispel such abuses, if they really exist, on the part of all the real friends of Agricultural progress, and the Secretary is hereby instructed to communicate with the Secretary of the County Society, calling his attention to the alleged abuses, and particularly to any inaccuracies and omissions which may be found to occur in the statement of receipts and expenditures accompanying the annual reports.

On the question of Annual Agricultural Statistics the Secretary was instructed to correspond with the Bureau of Agriculture with the view of ascertaining whether the Government designs to undertake the collection of such statistics in future.

In reference to Mr. Shanlay's application it was

Resolved,—That one quarter's rent be remitted to Mr. Shanlay in full satisfaction of his claim for repairs, in addition to the remission of any charge for fodder remaining in the outbuildings when he entered into possession.

AS COUNCIL OF THE ASSOCIATION.

Mr. Ferguson submitted an account for the services of guards employed at the Exhibition of 1859.

Moved by Mr. Ferguson, seconded by Mr. Buckland, and

Resolved,—That the account remaining over since last Exhibition at Kingston for services of guards employed by the Local Committee, amounting to \$86 75, be paid.

On motion, the Secretary was instructed to procure suitable badges for the members and officers of the Council and the Local Committee during the Exhibition.

On motion, it was *Resolved*—That Dr. Beatty be requested to visit Kingston at an early day for the purpose of giving directions in reference to the internal fitting up of the Exhibition Building.

The Board then adjourned to Saturday, September 19, at the Exhibition Grounds, Kingston, at 2 p. m.

CHEMICO AGRICULTURAL SOCIETY OF ULSTER.—NEW FLAX MACHINE,

We observe from the Journal of this important and useful Society, that the culture and production of Flax occupies a large share of its proceeding, and that its able and indefatigable chemist, Professor Hodges, continues to devote himself to the amelioration and advancement of agriculture, both as a science and an art. At the recent annual meeting of this Society, held in Belfast, we find from the Report that a new American Flax Brake was spoken of in highly commendating terms:

MR. GUILD—I beg to bring under the notice of the Chemico-Agricultural Society a new American invention for more thoroughly breaking flax straw, and so preparing it for the operation of scutching that the adhesion of the boon or shoove to the fibre is so slight that the scutching can be performed in less time, and the yield of fibre will be greater, than if the breaking be performed by any machine now in use. Nearly two hundred of Sandford & Mallory's flax and hemp breaks are at work in America, and the saving effected by their use is such that the machine is paid for in from twenty to thirty days. They are simple in construction, portable, not weighing over 10 cwt., do not occupy more than five feet square, require less than one horse power to drive, and no skilled attendance, will break from twenty to thirty cwt of straw per day, taking from it in the operation from 34lbs. to 50lbs. per cwt. of shoove, and will give an increased yield of fibre of from 6 to 38 per cent., according to the nature of the straw. No particular machine is required to scutch with afterwards—that operation can be performed by hand or by the ordinary mill stocks; if by the latter, much less speed will be necessary, at least one-third less than if the straw were broken on ordinary rollers. The flax produced is also softer, and more stones can be cleaned to the hand per day, whilst the tow left is clean, and worth nearly double the common scutching tow. The machine consists of an iron frame, carrying two pairs of fluted metal rollers, the flutes being of a peculiar shape; to these rollers is communicated a rapid vibrating backward and forward motion, whereby the straw is crushed and rubbed so as effectually to loosen and shake off the shoove, and by an ingenious arrangement a continuous progressive movement is given to the

rollers, as well as the vibrating motion, whereby the straw is fed through in a steady stream. No more hands are required to work this break than those now in use; the straw is streaked ere being presented to the rollers, and is ready for the scutchers as it comes out. The machine arrived here at so late a period in the season, when most of the scutch mills had ceased working, that I had difficulty in getting the trials I wished. Still, through the kindness of some gentlemen, I am able to give the Society a statement of a few. The Rev. Joseph Bradshaw, Milecross, Newtownards, writes me, under date March 7:—

“SIR,—The flax straw (112lbs.) which was put through your brake (‘Sandford & Mallory’s Patent’) produced, when cleaned or dressed, 22lbs. 4ozs.; whilst another lot of exactly the same kind of flax, and same weight, produced 20lbs. 10ozs., thus showing a difference of 1lb. 10ozs., in favour of the American brake.

“I superintended the operations of both parcels from first to last, so that I can guarantee the accuracy of the result. The second lot was done in the ordinary way, having been rolled by wooden rollers, and afterwards scutched at three handles driven by a water wheel; the first lot after being passed through your brake, was likewise scutched in a similar manner by the same men at the same stands, so that I consider there could not have been a fairer experiment than the one I made—I remain, &c.,

“JOSEPH BRADSHAW.

“Mr. Alex. Guild, Belfast.”

And Mr. John Williamson, Roughport, at whose scutch mill a machine has been at work for a month, says in a letter dated the 9th inst.:

“ROUGHPORT, April 9, 1863.

“DEAR SIR.—I have to report to you on the merits of Sandford & Mallory’s American brake, which has been at my scutch mill for the last three weeks. I have tried it on various kinds of straw, and find the results as follows:—On very poor and hard straw I found a gain of 1lb. per cwt. over the same broken by ordinary rollers; on medium quality of straw a gain of 2lbs. 4ozs. per cwt., the yield by your brake being 18lbs. 4ozs. against 16lbs. on same straw broken by ordinary method: on very tender straw over-watered the gain was 3½lbs. per cwt. the yield by your brake being 14½lbs. against 11lbs. by ordinary method. I find the flax from your rollers easier scutched, and the yield softer to feel and the quality improved than that rolled in the ordinary way.—Yours truly,

“JOHN WILLIAMSON.

“Mr. Alex. Guild, Belfast.”

It will be seen that the saving in over-watered and tender straw is very great. In America, even better results have been obtained, and I have several certificates to that effect, but I prefer that the machine should make its way here on its merits, as tested here; and I shall feel under obligations to the Society if they will appoint suitable parties to test the merits of the

invention in a thorough manner. There is a machine at work every day at Messrs. Thompson & Co’s Foundry, Brown Square, and any gentleman is welcome to bring his own straw and experiment for himself. Mr. Williamson has also kindly offered to show the one at his place at work to any one calling. I may mention here that the machine breaks hemp so thoroughly that little or no scutching is required afterwards. The price complete is £50.

We subjoin the following remarks on Sandford & Mallory’s Flax Brake, taken from the last number of the New York *Working Farmer*.

From the inquiries which prevailed among farmers a few months since, upon the subject of Flax Culture, we presume that much more than the usual breadth of land has been devoted to this crop, the present season. We expect to receive shortly the reports of the Commissioner of Agriculture for the month of June, in which the statistics of the Flax crop, so far as ascertained, will be presented, and we shall then be enabled to judge of the prospective yield of this great staple for the year 1863.

We have every reason to believe, however, that the crop of 1863 will be enormous, as compared with that of other years, and consequently, we desire again to call the attention of Flax growers to the unprecedented merits of SANDFORD & MALLORY’S NEW FLAX BRAKE. On page 161 will be found a fine representation of this ingenious and efficient machine, and also many flattering testimonials from those who have used it for months, showing its great superiority to any Flax Brake previously in use. In our August number we shall publish similar recommendations from other parties, as the proprietors desire that the public shall become fully acquainted with those *practical tests* and well authenticated *facts*, which furnish an indisputable criterion of the great merits of their machine. Over SEVENTY of these Flax Brakes have been sold in various sections of the country during the past eight months, and no better test of their efficiency can be asked, than the uniformly favourable reports and opinions of the different operators.

MESSRS. SANDFORD & MALLORY are now manufacturing a small machine—costing only \$155—admirably adapted to the wants of the FARMER. We witnessed its operation a few days since, at their rooms in the Harlem Railroad Building, corner of White and Centre Streets, New York, and while the work it performs fully equals in quality that of the larger machines, the labour required to drive it is hardly as great as that of turning a grindstone. Every farmer who has a crop of flax to prepare for market, should order one of these small brakes immediately, as it will pay for itself in one season in the saving it will effect in the preparation of his Flax, and its transportation to market. We ought to thank the persevering industry of the inventors, who

have brought out this new Flax Brake in the very nick of time, when the demand for Flax as a substitute for Cotton, and the scarcity of labourers on account of the war render a machine of this description a prime desideratum in the economy of the FARM.

REARING CALVES ON MILK AND LINSEED MEAL.

When a calf is first dropped it is covered with a thick slime which Dame Nature teaches the cow by instinct to cleanse by licking it off; and if she shows any disinclination, the country people, to induce her to do so, sprinkle it with a little salt and fine oatmeal. This is necessary for the calf's comfort, cleanliness, and health, and is thought by many usefully medicinal to the cow, and on every account should be encouraged. If the calf is permitted to suck the cow it will be more difficult to make it take its meals from the pail, and also fret and annoy the cow, which will not give its milk freely, but retain it for its offspring. But though it will be necessary to prevent the calf sucking its dam for these reasons, it should be fed on the cow's first milk or beestings, which nature designs as its most nutritious food; it is also medicinal, cleansing the bowels of the pent-up meconium or fecal matter secreted there during its confinement in the womb. It should, therefore, get a sufficient portion of this naturally medicinal aliment four times a day, say a pint and a half at a time, so as not to keep it fasting too long, and, at the same time, not to overload the stomach. The calf should get a portion of its own dam's milk as long as it retains its peculiar medicinal quality, which may be known by its coagulating upon being heated or boiled; but older calves should not get any of it, as to them it would be injurious.

When the calf is a week old a little skim milk may be gradually mixed with the new milk, and after a fortnight, a little fine oatmeal, Indian, bean, pea, or linseed meal mucilage may be added gradually, which will enable the industrious and economical housewife to save her milk for the production of butter or cheese, and rear her calves also.

No doubt but the best and most proper food for the calf is its own dam's milk; for it is a true food, in which the components of nutrition are so nicely balanced by the all-wise and beneficent Creator as to set at nought all human compositions; but it is of so much value for human consumption that it becomes necessary to economize it, and make imitations of it, though at a very humble distance; and thus it is that science comes to our aid. Professor Johnson says, in his "Lectures on Agricultural Chemistry," "that while the calf is young, during the first two or three weeks, its bones and muscles chiefly grow. It requires the materials of these, therefore, more than fat, and hence half the milk it gets at first may be skimmed, and a little bean

meal may be mixed with it, to add more of the *casein* or curd, out of which the muscles are formed. The costive effects of the bean meal are to be guarded against by occasional medicine if required. In the next stage more fat is necessary, and in the third week, at latest, full milk should be given, and more milk than the mother supplies, if the calf requires it; instead of the cream a less costly kind of fat may be used. Oil-cake, finely crushed, or linseed meal, or even linseed oil, may supply at a cheap rate the fat which, in the form of cream, sells for much money; and instead of additional milk, bean meal in large quantity may be tried, and if cautiously and skilfully used, the best effects on the size of the calf and the firmness of the veal may be anticipated."

This scientific note from Professor Johnson has engaged the attention of many stock masters in Ireland, and, amongst the rest, Mr. C. Beamish, of Cork, who adopted it and brought it to a regular system on an extensive scale. His formula for compounding the mucilage is as follows:—Thirty quarts of boiling water are poured on three quarts of linseed meal and four quarts of bean meal. It is then covered up close; and in 24 hours added to 31 quarts of boiling water, then on the fire, pouring it in slowly, and stirring it constantly to prevent lumps, with a perforated wooden paddle, so as to produce perfect incorporation. After boiling 30 minutes, the prepared mucilage or gruel is put by for use, and should be given blood or lukewarm to the calves, mixing it in small quantities at first with milk, say one-fourth mucilage with three-fourths milk, progressively increasing it, so that by the end of a fortnight it will be in equal parts; by the end of the third week, one and a half mucilage to one part milk; by the end of the fourth week the mucilage may be given in double the quantity of milk, and skim milk may be substituted for new milk, and by the end of the sixth week the mucilage will be gradually increased in the proportion of two and a half to one of milk, and from that out till the tenth week, the milk may be gradually reduced, so that by that time they may be fed wholly on mucilage till they are fifteen or sixteen weeks old, when they may be weaned.

During all this time, if too early in the season to put out the calves, they should be comfortably housed, well ventilated, and kept perfectly sweet and clean, with a little sweet hay tied in bundles, and suspended so that they may play with it, and learn to nibble and eat it, and a little pounded chalk mixed with salt, given in troughs to lick at pleasure, which prevents acidity in the stomach, and undue formation of curd, small lumps of linseed cake should also be given in other troughs, which they will soon learn to suck, if a little pains are taken to put a bit in their mouths after they have taken their meals of milk and mucilage. When housed it will be advisable to have a separate pen for each calf, of sufficient size to walk about in, to pre-

vent them getting into the habit of sucking each other, and swallowing the hair which, uniting with the curd, by the regurgitating process going on in the stomach, forms round balls, which are indigestible, and which is the fertile cause of the death of so many promising animals. The following scale of the quantity of milk, or milk and mucilage combined, for each calf may be useful, but should be altered according to circumstances:—For the first week the calf may get from 3 to 4 quarts daily; for the second week, 4 to 5 quarts; the third and fourth weeks, 5 to 7 quarts; fifth and sixth weeks, 8 to 10 quarts; six to eight weeks, 10 to 12 quarts per day, and so on, increasing the quantity about 1 quart per week per calf till weaning time, dividing the above quantities equally, and feeding the calves four times a day.

Some parties do not give so much liquid food per day, but make it up by giving them finely cut roots, dry oatmeal, &c.; but the animals are much too young for such food, though they may get the minced roots, so as train them into their use. Hay tea is an admirable thing also to mix with the mucilage and milk, as it contains a larger amount of nutriment in a soluble form.

In the summer time the calves may be left out on the grass, both day and night, in a fortnight after they are calved, and fed as already described they should be in the house; but a warm, sheltered paddock should be provided for them, and in wet weather they should have access to a covered shed.—*Irish Gazette*.

EXTRAORDINARY OATS.

A correspondent sends us a rich sample of prolific oats, accompanied by the following note. Having heard of a wonderful field of oats on Mr. Gibson's farm of Tullyquhairn on the estate of Argybigland in the "garden parish" of Kirkbean, I visited it, and found that rumor had not exaggerated the produce. The field, sixteen acres in extent, has a crop which rises on an average 6 feet 6 inches in length, and on two average ears I counted respectively 154 and 129 prickles. This fine crop is ready for reaping, and if weather permit, will be in stock before this intimation can appear in your columns.—*Dumfries Standard*, 1862.

THE GREAT INTERNATIONAL WHEAT SHOW.

We have much pleasure in calling the attention of our readers to the spirited enterprise of the Monroe County Agricultural Society, in organizing a great International Wheat Show to be held in Rochester, N. Y., September 8th, 9th and 10th. Our friends on the other side of the lake seem to have taken a course somewhat

similar to our Provincial Association, aided by the Canada Company, in offering large prizes for the best samples of wheat, exhibited in large quantities, especially adapted for seed. We trust that as the competition is open to the British Provinces some of our Upper Canada farmers will enter the lists, with a good chance, we think, of bearing off a prize. Whether they do so or not, they may safely reckon on disposing of their grain at a remunerating rate. Every practical man knows full well the advantage of a change of seed. We wish our neighbors, in this important undertaking, every success.

The following premiums are offered:

For the Best 20 bushels of White Winter Wheat,	\$150 00
For the Second Best do. do.	75 00
For the Best 20 bushels Red Winter Wheat,	100 00
For the Second Best do. do.	50 00
For the Best 2 bushels White Winter Wheat,	50 00
For the Second Best do. do.	25 00
For the Best 2 bushels Red Winter Wheat,	40 00
For the Second Best do. do.	20 00
For the Best 2 bushels Spring Wheat,	20 00
For the Second Best do. do.	10 00

Competitors for these prizes will be required to furnish samples of the wheat in the ear and with the straw attached, (say 50 ears of wheat and straw), also furnish a written statement of the nature of the soil on which the wheat grew, method of cultivation, time of sowing, quantity of seed sown, manures (if any used,) and mode and time of ripening and harvesting, and the yield per acre, with such other particulars as may be deemed of practical importance; also the name by which the variety is known in the locality where it was grown.

The Wheat must be one variety, pure and unmixed. The prize to be awarded to the actual grower of the wheat, and the wheat which takes a prize is to become the property of the Society.

It is hoped that farmers in all sections of the United States and Canada, who have good samples of wheat, will compete for these Prizes. It is highly important that the wheat growers of the two countries should meet together and compare samples of wheat raised in different sections. We understand that the money for these premiums has been raised by subscription, among the friends of Agriculture in Western New York, and the time of holding the Fair has been fixed so as to enable farmers to purchase their seed from the wheat entered for competition. A change of seed is also desirable, and it is believed that all the wheat of good quality sent to the fair will find purchasers at a high price. Full particulars can be obtained by addressing the President of the Society, Joseph Harris, Editor *Genesee Farmer*, Rochester, N. Y.

THE CROPS IN NORTHUMBERLAND COUNTY.

We have received a letter from an esteemed correspondent at Cobourg, under date of July 10th, from which we make the following extract in reference to the crops in that vicinity:—

"As I am writing I may state that crops in general look very well here this season, with the exception of hay, which will be light. Our spring was fine and all our crops were got in in fine order, and though the season and ground have been rather dry the crops have grown very well. There was some damage done by both the grubs and wire worm, especially on dry ground, and now I have heard of the *Aphis*, or louse, that did so much damage last year, having been seen on some fields in the neighbourhood. I carefully examined my own fields yesterday but saw none of them. Our spring wheat is just beginning to head out, and is in that stage when the wheat fly damages it. I see a few flies among mine, but I think they are less in number than I have seen them for some years, so, that should nothing unforeseen occur, we have the prospect of an abundant harvest.

The weather has been very warm for some time past, and is forcing our crops forward very fast; fine weather for corn, of which there is more planted this year than usual.

Our root crops are looking well, potatoes unusually so. There is some complaint of the fly taking the turnips, and some farmers have had to sow a second and third time, but this is the case more or less every season.

W. R.

CURIOUS FACTS IN FRENCH AGRICULTURE.

One of the most singular peculiarities of French Law and custom is that which leads to an almost infinitesimal division and sub-division of agricultural lands. M. Pinard, Procureur General of the Court of Douai, recently gave an interesting account of this remarkable fact in the social system of France, and of its results.

A law, introduced at the time of the first French Revolution, and still in force, decrees that the property shall, at the death of the proprietor, be *equally* divided among his children, and that no deed shall exceed the half of the testator's property if he leaves one child; the third, if he leaves two children; the fourth, if he leaves two or more." There are thus perpetuated and increased an immense number of small peasant proprietorships; a state of things which is generally held to be a curse on the prosperity of France.

M. Pinard says that the number of proprietors assessed to the land tax was, in 1842, 11,511,841; he adds that each of these estates consists in fact of several parcels not lying con-

tiguous, or compactly, but in detached portions—probably brought under one hand by intermarriage. Thus, while in 1842 there were over eleven and a half millions of land owners taxed, in 1834 there were of these *parcelles*, or parts of estates, 123,360,338. Deducting from this number everything proper to be deducted, and the rural property of France is believed to be divided into 100,000,000 *parcelles*, and the average area of each *parcelle* is not greater than one and a quarter acres—half a *hectare*.

About five million families, or three-fourths of all the inhabitants of France are engaged in agricultural pursuits. The French peasant clings with singular tenacity to his small estate; he will not sell it; he scorns to be a hired laborer; he is bent on remaining proprietor. He has no capital; often his land does not afford him a livelihood, then he goes to the usurer and borrows. Peasants whose estates yield two and a half per cent. at most, do not hesitate to borrow at the rate of six or seven per cent., rather than sell their land. The end is easy to see; the money-lenders at last get the property. But so poor are the peasant proprietors, so unenterprising, that "landed property is mortgaged to such an extent that the interest payable in consequence is actually equal to one third of the estimated rental of the Empire."

THE GRUB--A CURE.

During most of past week the grub continued its ravages to an increasing and nearly an alarming extent—being almost universal throughout the whole of the northern countries, the cold backward weather very much weakening the plants, and allowing the worm greater freedom for its ravages. Curiously enough this year the greatest amount of destruction has been upon dry and early soil, whereas in former years the grub used to commit most ravage in heavy wet soils. All the experience tends to show that the only safeguard against grub is to secure good sound seed, make the land well, and add manure which will aid in quickly advancing the crop. On one farm on which there has been a great deal of injury done by the grub, the farmer having apprehensions that a particular field in which there was a good deal of foggage would be very bad with the grub, had the land thoroughly harrowed, and before sowing the oats he mixed with the seed a quantity of guano equal to about 1 cwt. to the acre of land to be sown, and sowed by the hand the seed thus prepared. The seed was the same that he had sown in several other fields; and while in those where no guano was used the ravages of the grub are extensive, on this field laid down with seed mixed with guano, and on which he apprehended such injury, there is not the slightest appearance of the grub, and the crop promises to be a good one. An-

other farmer on Deveronside took the same plan with two of his fields, and these are quite free from grub, and exhibit great luxuriance, while the rest of his crop is much injured. We know of other cases where the same plan has been equally successful.—*Banffshire Journal*.

THE FLAX CROP IN CANADA.

The cultivation of flax is increasing every year in several portions of this Province, and the present condition of the growing crop is generally of a very encouraging character. With proper care and handling it will no doubt be turned to a profitable account, as prices must rule high in consequence of the great dearth of cotton. We take the following paragraph from the *Toronto Leader*, of July 21st:—

NEW FLAX.—We have examined a splendid specimen of new flax, grown by Mr. Robert Watson, of Whitby. The stalk averages between three and four feet in length, and will prove of a quality equal, if not superior, to that grown in Ireland, or any other flax-growing country. The ear, even at present, is large and heavy, and the crop promises to be most abundant. The quantity of seed expected may be safely estimated at twenty bushels per acre; and the quantity of fibre, when properly prepared for market, not less than 500 lbs. The seed is now worth \$1 50 per bushel of 50 lbs., making the yield \$30 per acre. The fibre is worth \$10 per cwt., which would yield \$50, making, in all, \$80 per acre. These facts should be most encouraging for the farmers of Canada, to devote their earnest attention to such a productive field for the development of their skill and industry, as the cultivation of flax would undoubtedly prove. We are indebted to Mr. John A. Donaldson, of Weston, for information on this subject, on whose authority we have to state that a more beautiful field of flax has never come under his observation in any country. We shall be happy to afford all interested, an opportunity of examining a fine specimen now in our office.

THE FLAX CULTURE.

We may now safely number flax as one of the crops of this country, as we find the cultivation of it has greatly increased, and we hope, therefore, permanently established.

It is a pleasing duty to notice the excellency of the crop wherever it has been grown, and we have now before us a sample from the farm of Stephen Wade, Esq., measuring upwards of three feet in length; also a sample grown in a piece of land at the back of the residence of B. Walker, in this town, measuring forty-six inches in length.

The latter is grown from white seed bearing a white blossom, and is said to be a very valuable variety on account of the length and fineness of the fibre.

We hope to hear that there is sufficient energy amongst us to establish retteries and scutching mills, so as to render the flax grown by the farmers a marketable commodity.

The Flax-Scutching machines imported by Mr. Walker, last year, are, without doubt, the most labour-saving and effective for this country, and we have much pleasure in making the following extract from a Belfast paper:—

This superior machine, which carried the prize medal from all competitors at the show at Lille, has borne high testimony to by a gentleman, in a letter read by the chairman at the special meeting of the Munster Flax Improvement Society, held on Monday, in Cork. The following are extracts from the letter referred to:—"The late improvements," says the writer, "made in the machine by the patentee so alter the working power of the machine as to double the quantity of work thrown off by it formerly, giving a superior finish, and requiring much less skill in the operatives." "I consider Rowan's Machine a positive acquisition, and feel confident that at no distant day it will be adopted in this country by those most deeply interested in the prosperity of the linen business.—*St. Thomas Home Journal*.

A WONDERFUL EWE.

Our readers, we doubt not, will find the following extremely interesting. There is in the possession of James Boyes, Esq., of Whitehill, Middlebie, a fine old Cheviot ewe, which has obtained the remarkable age of seventeen years, and has given birth to forty lambs. It is reported she is in lamb this year also, and promises, with the kindly attention of Mr. and Mrs. Boyes, to hold out for some years to come. The number of her years on the one hand, and the number of her progeny on the other, render the case of this fine old sheep rather remarkable, and such as, we believe, is but seldom paralleled.—*Annandale Herald*, Jan. 31, 1863.

EXHIBITIONS TO TAKE PLACE THIS AUTUMN.

PROVINCIAL AND STATE:

Upper Canada, at Kingston, September 21 to 25.

Lower Canada, at Montreal, September 15 to 18.

New York, at Utica, September 15 to 18.

Ohio, at September 15 to 18.

COUNTY AND TOWNSHIP:

Lanark County, at Almonte, September 15.

Wentworth and Hamilton, at Hamilton October 14 and 15.

Toronto and West Riding York, at Toronto, October 6, 7 and 8.

South Lanark, at Perth, Sept. 17 and 18.

Durham West, at Newcastle, October 8 and 9.

[Officers of Agricultural Societies will oblige by informing us of the days in which their shows are to take place.

The Dairy.

MILK.

There are but few of the natural productions of the animal kingdom more subject to diversity of quality than cow's milk. According to the old saying, "it's what goes in at the mouth that makes the cow;" but the truth of the adage depends upon many other conditions than the quantity and quality of the food consumed. Thus different breeds are not more diversified than are individuals of every specific breed, and this is equally applicable to the quantity of the milk as to the quality. But singularly numerous as these diversities may be, they are all subject to certain chemical and physiological laws, although such as yet may not be properly understood.

The chemistry and physiology of milk are two important topics, and it is very desirable that a knowledge of both were much more extensively and generally cultivated. The motto of the Royal Agricultural Society, "*Practice with Science*," is a golden one; but when we begin to apply the will to the investigation of either the chemistry or the physiology of this important secretion, the natural food of all young animals, we at once find ourselves in the dark, emerging, as it were, from under the canopy of night, into a region where the rays of science are only beginning to shed their enlightening influence upon the face of things. No doubt of late years chemistry has done much in the analytical investigation of the subject, while physiology has been making equally laudable progress; but, as the old proverb, "a little knowledge is dangerous," here applies, this only renders our position at the present time all the more unsafe, and every step we take in advance in a higher degree dangerous.

An instance of this has just occurred at present, a continental chemist having made the discovery, in his laboratory, that the milk of the evening milking is richer than that of the morning! One of our medical journals lays claim to the priority of the discovery, such having been made by its analytical commissioner some ten to twelve years ago. Now as regards the facts here discovered, most intelligent farmers have long been familiar with them, so that neither of our would-be chemical teachers have any right to lay claim to the discovery. We ourselves, for example, were thus taught when serving an apprentice-

ship upwards of thirty years ago—not as a secret, but a fact generally well known; although the contrary doctrine is often advocated by those who dispose of the morning milk, and reserve the evening for throwing up cream; and which, we aver, is highly credited by an unthinking public, who thus allow themselves to be imposed upon.

But although the doctrine is generally sound as to the richness of the evening milk, there are, nevertheless, many individual exceptions to it amongst milch cows, especially under certain artificial systems of management, where food and treatment are both of an abnormal character; and to this it naturally follows, as a corollary, that the degree of richness is widely diversified.

It is this exception and diversity in the degree of richness which renders the course of teaching pursued by the above chemists dangerous, and therefore highly objectionable, when received as a general rule of guidance. In short, granting that the milk of every individual cow in a large herd were analyzed with the utmost accuracy, as to the per centage of butter and cheese, the experiment would only be applicable to that herd, and not to another. And even in this limited light the analytical investigation falls far short of complying with the golden motto, "*Practice with Science*," already quoted. In other words, the practice performed by the chemist in his laboratory differs widely from the practice performed by the cow in the manufacture of milk; but the doctrine taught by the former is evidently the science of the latter practice, so that our objection when reduced to its simplest form, is the appending to the tail of one practice, if we may so speak the science of another.

The reader will readily perceive that the more commendable course advocated, is for chemists to confine their labours to their laboratories, in the advancement of the practice and science of chemistry, and to let physiology and farming alone. Applied to milk, the churn and the cheese-vat tell us better than they can do the quantity of butter and cheese which our milch cows daily and yearly give. Two samples of milk may possess equal quantities of butter and cheese, and yet the value of the two, when sent to market, may be very different in the estimation of competent judges. The difference is equally great in the rearing of calves at home. As to the butter and cheese, the difference of value in the market is often as great as three hundred per cent. Nothing can be more fallacious, practically speaking, than to judge of the quality of the milk exclusively by the quantity of butter and cheese which it contains. "Galen placed a newly-dropped kid near three vessels—one filled with milk, another with honey, and another with wine; after smelling at all three, it presently began

to drink the milk" (Todd's Cyclopædia, article Smell). It was not the butter and casein that led the kid to prefer the milk, but its odorous properties. Nature hath implanted in animals the organs of smell and taste, and these have their corresponding qualities in the odorous and sapid properties of the food they consume. And milk is no exception from this natural law, its quality and value depending as much if not more upon its odorous and sapid properties than its butter and cheese; for however essentially necessary the latter may be, it is only when accompanied with the former that they possess their real value, giving richness of quality to the natural dietetic beverage. Now, what are these odorous and sapid properties, chemically speaking, upon which the value of milk so much depends? Again, we are all familiar with the difference between the odorous and sapid properties of milk; when the cows are fed upon grass, turnips, grains, hay, or oil-cake and barley-straw, &c.; but we do not know what those differences chemically are, although this is the kind of knowledge farmers stand most in need of, from the laboratory of the chemist.

The practice of the cow involves the conversion of the food she consumes into milk; and when we consider the diversity in the quality of the former, and the comparative uniformity in that of the latter, there must of necessity be a corresponding diversity in the process. But, as has been already shown, this uniformity is more apparent than real, there being a corresponding difference in the colour, smell, taste, and consistency of milk to that of the food; and it is more than probable that this harmonizes with the health of the cow and calf, and the normal quality of the milk, in all cases where the difference in the quality of the food is natural—the opposite being true when it is unnatural. Now we have here normal and abnormal food, processes, and milk; but as yet we are not sufficiently versed in physiology to distinguish the one from the other, so as to choose what is natural, and shun unnatural food—unhealthy cows, calves, and bad milk.

Again, as to the richness of the evening milk, how is this accomplished? Can we by any artificial means so coax the cow as to make her give as rich milk in the morning as in the evening? One reason why the morning milk or that secreted during the night is thinner, may be traceable to the abstraction of more of the food to the reparation of the body. So far, this suggests an equilibrium of forces, or a more equitable distribution of the works of tear and wear, and reparation. But how is this to be effected? If the reparation is greater in poor cows than in fat ones, the milk of the former will be thinner. Query, is this the case? Has Mr. Forsall, who fattens his milch cows, done anything to the solution

of the problem relative to an equilibrium of forces? What reply does his churn and his cheese-vat give?—*Farmer's Magazine*.

TREATMENT OF MILCH COWS.—A dairyman noted for the large amount of cheese yielded by his cows, told the editor of the *Dairy Farmer* that one of the secrets of his success in this respect was the careful manner in which he treated his herd. His cows were driven to the stable leisurely. No dogs were used for the purpose of driving the cows, and persons in his employ who were caught striking or in any way abusing a cow, were discharged on the instant. Let the cows have an abundance of food, and take their time in coming to the barn, especially in hot weather; milk clean and regularly; and from fifty to a hundred lbs. more cheese can be made per cow, than when the animals are dogged out of the fields night and morning.—*Boston Cultivator*

TEN RULES TO BE OBSERVED IN MAKING BUTTER.

In making good butter, there are several nice operations to be gone through with which require an eye to cleanliness, forethought, and some little experience.

1. On milking clean, fast, yet gently, regularly twice a day, depends the success of the dairyman.—Bad milkers should not be tolerated in a herd; better pay double the price for good ones.

2. Straining is quite simple, but it should be borne in mind that two pans, about half full each, will produce a greater amount of cream than the same milk if in but one pan; the reason of this is the greater surface.

3. Scalding is quite an important feature in the way of making butter in cool weather; the cream rises much quicker, the milk keeps sweeter much longer, the butter is of a better color, and churns in one-half the time.

4. Skimming should always be done before the milk becomes loppered; otherwise much of the cream turns into whey and is lost.

5. Churning, whether by hand or otherwise, should occupy forty to fifty minutes.

6. Washing in cold soft water is one of the preserving qualities of butter, and should be continued until it shows no color of the milk by the use of the ladle; very hard water is highly charged with lime, and must in a measure impart to it alkaline properties.

7. Salting is necessarily done with the best kind of ground salt; the quantity varies according to the state in which the butter is taken from the churn—if soft, more; if hard, less; always taking the taste for the surest guide.

8. First working, after about twenty-four hours, is for the purpose of giving the butter greater compactness.

9. Second working takes place at the time of packing, and when the butter has dissolved the salt, that the brine may be worked out.

10. Packing is done with the hands or with a butter mall; and when butter is put into wooden vessels they should be soaked two or three days in strong brine before using. After each packing, cover the butter with a wet cloth, and put a layer of salt upon it; in this way the salt can easily be removed at any time, by simply taking hold of the edges of the cloth.

Butter made in this way will keep any length of time required. (J. C. Adams, in *Genesee Farmer*.)

CREAM CHEESE.

Such of our readers as are fond of this luxury, and can procure the materials for it, are requested to try the subjoined recipe, cut from an Irish Journal, the editor of which highly recommends it:—"Take a quart of cream, or if not desired very rich, add one pint of new milk, warm it in hot water (if necessary) until it is the temperature of milk from the cow. Add a tablespoonful of rennet, let it stand till thick, then break it slightly with a spoon and place it in a frame eight inches square and four inches deep, in which a fine canvass cloth has been placed. Press it slightly with a weight, let it stand twelve hours, then put a finer cloth in the frame—a little powdered salt should be put over the cloth; it will be fit for use in a day or two."

Horticulture.

BLACK KNOT OR CANKER IN FRUIT TREES.

EDITOR OF THE AGRICULTURIST.—SIR,—Desirous of making known to the public, through your useful journal, the cause of the black knot or canker in our fruit trees, according to my observation, so destructive to the plum and cherry tree of this country, I beg to say that I have watched and examined with considerable care for the last six or seven years the progress of this disease, and I have come to the conclusion that it arises from the ova of the curculio, an insect that infests our gardens and orchards during the spring and summer. They not only destroy our apples and plums before they come to maturity, but actually attack the bark of the tree, by making deposits with their stings in the spring of the year, when the trees are in bloom, and when the bark is both tender and juicy, and easily perforated by the tube or sting of the insect. From the time the impregnation is made till the worm or grub is formed, the bark becomes poisoned from its effects, spreading and oozing itself out on the branches and body of the tree, like a spongy

excrecence, till the grub absorbs the entire substance of the sap. The knots then become black, and dry up, and in a short time the vitality of the tree is destroyed. About this time the insect leaves the knot and fallen fruit, and changes itself to its original form, the veritable curculio. In the fall they bury themselves in the ground, or under the decayed bark of the trees, till the following spring, when they again resume their destructive course. I have often discovered from three to five grubs in some of the knots in the fall, resembling in every particular those that affect the young plums. I am therefore well convinced in my own mind that the curculio is the sole cause of the black knot, (and not the tree borer, as some may imagine) and is the cause of losing our fruit and so many of our valuable trees. Now, Mr. Editor, can any of your enlightened readers suggest a remedy by which this evil might be stayed, and thereby serve the cause of the fruit grower, and promote the general interests of Horticulture.

I am, &c.,

THOMAS WILSON.

Kingston, 30th July, 1863.

FRUIT GROWERS' ASSOCIATION OF UPPER CANADA.

The Midsummer Meeting of this Association was held in the Agricultural Hall, Toronto, on Wednesday the 15th day of July last.

The President, Judge Logie, took the chair, and after the reading of the minutes of last meeting by the Secretary, the committee, to which was referred the matter of making suggestions to the Board of Agriculture, in relation to the Prize List of the Provincial Agricultural Association, reported that the Board of Agriculture had given great consideration to the suggestions presented by the Fruit Growers' Association, and had adopted them, with very slight alteration, in the Prize List for the present year. The committee on the Agricultural Bill reported progress made in securing the placing of the Association on the same footing as Agricultural Societies, and the committee was continued.

The subject appointed for discussion at the last meeting was announced to be "Small Fruits," and the Association first took up

THE STRAWBERRIES.

Mr. Leslie reported a new strawberry, "Myatt's Prolific," imported from England two years ago, but had not found it to be very productive.

TROLLOPE'S VICTORIA.

Mr. Arnold, of Paris, said it did pretty well in the garden, but if planted in the field, he considered it a very useless berry. It was not to be compared to Wilson's Albany. He could gather a bushel of the latter where he could not hope to get more than a quart of the former.

The "Victoria" was very tender in the winter, and even when carefully covered with straw or bark, the runners were apt to get destroyed.

Mr. Leslie said he had found it a very valuable plant, and as to its hardness, he thought it was harder than anything else. It was harder than the "Hooker," and nearly as hardy as the "Wilson." He would put it next to the Wilson. He spoke of it when grown in soil damp and low.

Mr. Arnold—Mine is a dry, light soil.

Mr. Humphreys said he had not grown it much, but he had found it a very valuable fruit. He would not recommend it for general cultivation, but for amateur cultivation he must recommend it highly. It was a magnificent fruit.

Dr. Johnson said he did not think it a hardy berry. It required much protection during the winter, and was by no means so good a bearer as the Wilson. He would not recommend it for market purposes.

Mr. Fleming said Hooker's berry was quite hardy with him, so was the Triumph-de Gand.

Mr. Laing thought it an excellent strawberry, but a very shy bearer. He did not consider it worthy of general cultivation.

Mr. D. W. Beadle would not recommend it for general cultivation. He was afraid it would not give satisfaction in that character. It was almost a shy bearer, certainly not prolific.

Mr. Leslie said it had taken far more prizes than any other strawberry at present cultivated in Canada.

It was determined to leave it upon the list of the Association for another trial.

TRIUMPH DE GAND.

Mr. Arnold said it was not a hardy berry, and the day after it got ripe it turned exceedingly bitter.

Mr. Humphreys had a few only in his garden. He had, however, seen some very fine ones in the garden of a neighbour, Mr. Small. His soil was much heavier than that of Mr. Arnold's.

Mr. Leslie thought it came next to the Wilson as a bearer, and it would keep bearing fully three weeks in good soil. It beat the Wilson in that respect. He thought it was one of the best crops cultivated, so far as his experience went.

Mr. Tyrrell agreed with Mr. Leslie; but he was not acquainted with it sufficiently to recommend it for general cultivation.

Dr. Johnson said it was one of the best berries out of the earth. He had picked a crop of it for six weeks in succession. It was one-third more productive than the Wilson, at least. It was sweeter than the Wilson, and quite as hardy. He recommended it for market cultivation.

Mr. Leslie said he would like to add to what he had already said, that it was one of the hardest berries. It stood the winter as well as Wilson's Albany.

Mr. Fleming thought it a first-rate strawberry, and one which should be cultivated for market purposes. But he must certainly give the Wilson the preference for hardiness.

Mr. Laing considered it one of the first strawberries. It required a strong soil. He recommended it for general cultivation.

D. W. Beadle said his experience was very favourable. He thought very highly of it. It stood next to the Wilson in his estimation; and for productiveness and flavour he preferred it. It made a good market berry. It had a sort of glazy coating, which appeared to protect it from injury in carriage.

Voted upon the list for general cultivation.

MACAVOY'S SUPERIOR.

Mr. Holton said it was an old variety, but a good bearer and of excellent flavour.

Mr. Humphreys questioned whether it was a hardy berry, but it was a very good one.

Mr. Laing thought it ought to be placed upon the list for further trial.

Mr. Leslie said it was an old berry, and it had been dropped by the country. It might answer well some parts. He would like to see it tried.

Mr. Fleming thought it was not worth while to revive it.

Mr. Johnson favoured its being placed upon the list for trial.

Mr. Arnold had an idea that the Society was travelling backwards. He thought there were at least a dozen other varieties that were better.

Mr. Beadle said that unless it were planted near some strong fertilizing variety it would not yield any fruit.

McAvoy's Superior was therefore allowed to drop.

EARLY SCARLET.

Mr. Laing would recommend it for general cultivation.

Mr. Arnold asked whether it was superior to the Jenny Lind? This was earlier, more productive and quite as large.

Mr. Holton thought that both ought to be placed on the list for further trial.

Dr. Johnston said the "Jenny Lind" was the small Early Scarlet. It was about ten days earlier.

Mr. Leslie would recommend the large Early Scarlet for general cultivation. It held its crop longer than any other berry.

Mr. Humphreys would recommend it for general cultivation.

D. W. Beadle thought it was the hardest berry we had. It stood the most abuse. It would grow amidst shrubs and grass, and in the shade, just where farmers were in the habit of planting strawberries. It was a farmer's fruit. It would grow in spite of all ill treatment, and its flavour was excellent.

Voted on the list for general cultivation.

Russell's Strawberry was mentioned by some of the Members.—D. W. Beadle said he saw it on exhibition at Western New York Fruit Growers' Meeting, in June last. The fruit was pronounced to be better in flower than Wilson, and the size averaged larger. One plant on exhibition had on it 226 perfect berries. Mr. Charles Downing stated to Mr. Beadle that he

had seen the beds at Seneca Falls, and that there the variety evidently succeeded well, and gave great promise.

Raspberries were then discussed, and Brinckle's Orange, Fastolf and Belle de Fontenay were placed on the list for general cultivation.

The Secretary called the attention of the meeting to some berries which Mr. Arnold, of Paris had laid on the table to shew his success in hybridizing. It had been questioned whether the native Black Cap could be hybridized with the Antwerp, and it was a very desirable thing to procure a raspberry as hardy as the Black Cap and possessing its flower, and having at the same time the size and pulpiness of the Antwerp.

Mr. Arnold said he had carefully hybridized with the "Belle de Fontenay." The specimens were from seed raised in 1860. Last year the pistils had scarcely developed themselves at all. This year they were much larger. He lived in hopes that next year they would be much more perfect than they are now. There was nothing so far gained, only it showed the possibility of hybridizing. The canes were now standing seven feet high, and were totally uninjured by the frost.

GOOSEBERRIES.

Mr. Fleming recommended the growing of the stronger kind of gooseberries, in clayey soil, and then he thought mildew was not to be feared.

M. Arnold said his experience was different.

Mr. Humphreys said he had cultivated gooseberries for ten years in a clayey soil, and had never had a mildew.

Mr. Fleming would recommend the Plourchboy, Phoenix, Langley's Green, large Early Yellow, and Late Yellow.

Mr. Leslie recommended the "Yorkshire Lad."

Mr. Arnold spoke favourably of the Downing's seedling.

Mr. Johnston recommended Houghton's seedling, as good for light soil, and not subject to mildew.

Mr. Arnold said he had no trouble in raising any quantity of gooseberries of any sort for the first two years, but after that he was bothered with mildew.

Mr. Fleming said he had cultivated these gooseberries for ten years in succession, and always had heavy crops.

After discussion it was agreed to place the "Plourchboy," the "Irish Red," "Langley's Green," "White Smith," "Warrington," "Crown Bob," "Sulphur Yellow," "Heart of Oak," "Phoenix," "Late Yellow," "Early Yellow," and "Houghton's Seedling," upon the list for cultivation.

Dr. Johnston said he would give a receipt for preserving gooseberries from mildew. He took a pine board, bored a two inch augur hole through the centre, and then cut the board through the centre of the hole. He then put the boards under the bushes, with the stem of the tree in the centre of the hole. About the

time mildew came he sprinkled the bushes with a mixture of two quarts of salt, one quart of slacked lime, and three gallons of water.

Mr. Fleming said the late Hon. Mr. DeBlaquiere used a couple of shingles instead of expensive boards. He thought Dr. Johnston's plan was too troublesome and expensive.

A letter from Andrew Murray, Esq., Assistant Secretary of the Royal Horticultural Society, England, was handed to the Secretary by Mr. Leslie, inquiring what was the effect produced by our Canadian climate, soil, &c., upon varieties of Apple introduced from England, and what upon returning the same variety back to the place of its nativity. The letter was referred to a committee, composed of Messrs. Fleming, Leslie and Humphreys.

It was resolved to discuss grapes, peaches, pears and apples at the next meeting.

A vote of thanks to the Board of Agriculture, for the use of their commodious room, was passed, and the Association adjourned, to meet in St Catharines on Wednesday the 11th day of November next.

FRUITS EXHIBITED.

Mr. George Leslie, Toronto, exhibited 14 choice varieties of cherries, including "black Tartarian," "Fellowes' Seedling," "Waterloo," "Carnation," "Mayduke," "large red Bigarreau," "Black Eagle," "Elkhorn," "Elton," "Napoleon Bigarreau," "White French Guigue," "Belle de Choisy," and two very fine new seedlings: four varieties of strawberry, viz: "Triumph de Gand," "Wilson," "Myatt's Prolific," "Trollope's Victoria," and five samples of the cherry and white grape currants.

Mr. J. Johnston, of Nova, exhibited four varieties of currants, viz., black Naples, white grape, Prince Albert, and Victoria, and five varieties of gooseberries, including Crownbob, Whitesmith, Houghton seedling, white eagle, and yellow sulphur.

Mr. J. D. Humphreys, of Toronto, shewed five varieties of cherries, viz., black eagle; black Tartarian, belle de choisy, Fellowes' seedling, and Napoleon Bigarreau, the white and red Antwerp raspberries, and the white and red grape currant, with four varieties of gooseberries, viz., sulphur yellow, red Warrington, Whitesmith and ploughboy. His fruits were as usual fine and choice.

The Secretary exhibited two specimens of currants of the cherry variety, very large and fine.

CULTIVATION OF THE FILBERT.

[Having received several enquiries respecting the culture of the filbert in Canada, we transfer to our columns an article from the *Journal of Horticulture*, from the able pen of Mr. Robson, head gardener to Viscount Holmesdale, of Linton Place, near Maidstone,

Kent, the most celebrated fruit district of England, and for the growth of filberts in particular. Much of the success of filbert culture depends on a correct system of pruning; a matter, to which from the little we have seen on this side of the Atlantic, too little attention is paid.—Eds.]

Whatever differences of opinion may exist respecting the management of most of our hardy fruits in regard to the amount of pruning they require, there is no question that the knife, or it may be the saw, is more freely used in the treatment of this tree than in that of any other. It is not too much to say that in the case of the filbert fully nine-tenths of every year's growth are cut away, and often more than that; and, if we except the grape vine when pruned on the spur system, there is certainly no other fruit tree on which the knife plays so conspicuous a part. As the filbert is in general a free and rather fast-growing tree, the abundance of wood to choose from enables the cultivator to select that which is best adapted to give the shape he wants. This is done with so much exactness, that, in a well-managed orchard of this fruit, one tree so much resembles another that the cursory observer might suppose that they had all been turned out of one mould. A glance at the way this is done in Kent, where so many acres are under this crop, will assist the amateur in keeping the trees within reasonable bounds, and also in making them more fruitful than if allowed to run rampant amongst other trees less vigorous than themselves. To make this more clear, we will divide this subject into the following heads:—

SOIL AND SITUATION.—Although occasional plantations of this fruit may be formed on stiff, heavy ground, such plots are the exception, for they rarely prosper and are fast disappearing. A dry, stony soil, not too shallow, without anything pernicious in the subsoil, is the one the filbert likes best; and many hundreds of acres of the best plantations in Kent are on the slopes of hills having limestone at no great depth below. Occasionally they are also planted over the chalk, but the result is less satisfactory.

Generally speaking, the soils which overlie Kentish ragstone, or its substitute, which in local language is called "Hassock" (a soft stone unable to endure frost), are the best; and in tillage quantities of such stones as large as a half-brick are turned up and mixed with the surface soil, presenting anything but an inviting appearance. In such soils both the filbert and Morello cherry seem to thrive better than in ground of any other description, and, what is equally important, they bear well also. Such a soil is, of course, a stranger to stagnant water; and though the substratum is hard when first broken up, there is nothing

in it pernicious to vegetation, as seeds will vegetate in it soon after being thrown to the top. Being of a half-sandy nature, it may with advantage be used as a fertilizer to soils of a contrary description. All the filbert plantations are not on soil of the above description, but it is generally admitted that on such the best crops of fruit are produced. The nearer, therefore, that it can be imitated elsewhere, the greater the chance of success.

Situation has also something to do in the matter, and when a choice of this exists the western slope of a hill is the best position; but in the valley of the Medway plantations are formed on all inclinations, dryness of bottom being one of the conditions first of all insisted on, and a soil not by any means meagre in regard to depth is also necessary. The other conditions are all subservient to them. Shelter from very high winds may be useful, but this is of less consequence than for most other fruits; but very exposed places, as the tops of naked hills, are too cold and ungenial, and, though the tree will thrive there, it is seldom fruitful enough to be satisfactory. Though blooming amongst the earliest of all our fruits, the tree is far from being the hardiest. The beautiful little tufts of crimson which form the female or nut-bearing blossom are very sensible to frost, and are often damaged by it. The long green catkins or male blossoms which hang all the winter are hardy enough; but if destroyed before the others make their appearance, the crop, of course, is bad. Generally speaking, however, the well-being of the crop depends on other conditions more than this; and so many things are necessary to perfect success that the crop of filberts is, perhaps, more capricious than that of any other fruit, although when good nothing yields a better return. Upwards of a ton weight per acre has been gathered in favourable seasons; but as filberts are often planted in conjunction with apples, pears, and other fruits, the return is limited in consequence of the ground taken up by these. Nevertheless, the cultivator generally favours his filbert trees if they do well, and the others are cut away.

PREPARATION OF THE GROUND AND PLANTING.—Ground of the above description is generally trenched, and all hard stones that will do for road-making purposes are taken out; but such soft ones as are of no use and likely to be split up into fragments by the winter frost are left in. I think about 9^d. per rod for trenching the ground, and about the same per ton for such useful stones as are taken out, is often paid, and the increased value of the land well repays this outlay. This being done early in the autumn, the young trees are planted as soon as they can be conveniently got in, taking care to do this, if possible, when the ground is dry.

Many growers raise their own plants; in

fact, it is common for most Kentish farmers who grow fruit for market to have a nursery where they rear large quantities of currants, gooseberries, and the like, as well as graft and propagate apple and other trees by the hundred. In such places filbert trees are plentiful enough, and they are raised from suckers, which are produced in great numbers when required, as will be shown hereafter. Small plants having about ten inches or a foot of clear collar, and then spread out into branches in all directions, are selected. Assuming that the plantation is intended ultimately for filberts only, they are planted about 12 feet apart each way if the ground is good; but if not so likely to suit them, 10 feet might be substituted. Generally currant trees, or it may be hops, or both, are planted between to occupy the ground while the filbert is growing, and sometimes standard apple, pear, or plum trees are planted at wider intervals to remain as permanent trees; but this plan has been in a great measure abandoned, and everything made subordinate to the filbert, when it is intended to have a first-rate plantation.

If the ground at the time of planting has been recently trenched, and much of the sub-soil thrown to the top, it would be better to have a little mellow fine earth that has been long exposed to the atmosphere, and to give each tree a spadeful or two to start its roots into. This is frequently done with hops, and also other trees where necessity obliges the planting so quickly after the trenching. Treading around the plant when dry weather sets in about April will be necessary. A low-growing crop is sometimes taken off the ground. This, however, will suggest itself to the cultivator, but I have seen plenty of instances where the farmer paid £6 and upwards per acre rent, and where he found it to his advantage to allow the newly-planted trees—filberts, gooseberries, currants, or hops—the whole of the ground, occasionally stirring it during the summer, and, of course, keeping all the weeds down. If the intending cultivator thinks he cannot afford filberts the whole space, let whatever vegetable crop he takes off the ground be kept clear of the filbert trees, and remove it as early in the autumn as possible. I may also observe, that if currants or gooseberries be planted between the filbert trees, they may be from 5 to 6 feet apart, taking care that those nearest the filberts are cut away in time to prevent their injuring the more permanent occupiers of the soil.

PRUNING THE YOUNG TREES.—It has been remarked that no fruit tree is cut with more severity than this, and long experience has proved that without doing so a good crop of fruit need not be looked for. Some judgment is also wanted to start the tree into the proper shape at first, and a peep at those of mature age will show how this is to be effected. The universal custom in Kent is to train

the tree into a sort of basin shape, not unlike the ribs of an umbrella when inverted; and in the adult tree, the edges or tips of all the branches radiating from the centre being of a uniform height of about 5 feet, a great similarity exists amongst the trees which compose a plantation; and if the ground is level the eye of the spectator will skim over the whole. Their height and uniformity are very striking after they are newly pruned, but, of course, when the summer's growth is going on they are widely different, and show as rampant a growth as that of any plant I am acquainted with, some of the shoots being little short of 8 feet long, straight and tapering like an osier wand. Those of the young plants are rarely so long, and it is these that we have more especially to direct our attention to.

In the young plants all central and all gross shoots must be removed, and such small ones as are of a spreading tendency are left, being shortened at the tops. It will be as well to describe the Kentish mode by which another gross growth is in a great measure prevented from taking place when the former one was removed, which is very simple, and might in some cases be copied elsewhere with advantage. It is simply to cut out the coarse rampant shoot with a coarse-toothed little hand-saw, making a sort of haggling cut, instead of the clean one caused by the knife. This, rough, haggled, cut, with its occasional splintering of the top, is less likely to produce another similar shoot from its base next year than if it were an evenly cut one; hence the practice of using the saw, not in pruning the young trees only, but also those of more mature growth.

The pruning of the first year leaving only five or six side shoots, the number will not be much increased the second year, only a fork may be here and there introduced when the space seems wide. The rank, coarse wood being cut away as before, and the small, short-jointed pieces only left, and these shortened to the suitable length. Keep the centre perfectly open so that the sun may shine into it and on the north side as well, or perhaps, better than on the south side of the tree. In the third year some tiny shoots will indicate, probably, the presence of fruit-bloom; leave a few of these shortened to about three inches or less, and keep the remainder of the tree pruned to the shape recommended above, which is that of a basin or bowl, and do not let the permanent branches or ribs be too thick.

PRUNING TREES OF MATURE GROWTH.—If the ground is suitable, the summer shoots will be long and straight, like many of the basket willows, and sometimes they are used for the same purpose. From 3 feet to 6 feet is the average length. The first thing done when pruning commences in the autumn is to look

over all the trees, and pull out by a jerk of the hand all the gross strong-growing shoots in the centre. Generally they will come out pretty well, and bundles of these are very useful for tying up plants, or such out-door flowers as only require a slender stake. The rest of the pruning is done with the knife and saw, the latter being used to cut off such strong, gross shoots as it may be necessary to shorten to a couple of inches or so, and the more slender are cut back with the knife. It is seldom that more than 4 inches are left of any young shoot, and very often much less.

The short-jointed small wood generally produces the most nuts, and those most exposed are the best; but nuts are also grown near the centre of the plant, on spurs of the long main branches, and some on the subsidiary ones. Occasionally a large limb may be cut out, but this is not often the case unless disease or appearance of too much crowding points it out as necessary, or when the tree has exceeded its bounds. In the latter case it must of necessity be cut back, and the occasional bringing forward of young branches from the centre will enable this to be done on the same principle that other fruit trees are pruned; but the filbert will bear rather a greater amount of spurring-back than any tree I am acquainted with. The quantity of young wood left on an adult tree each year at pruning is exceedingly small, and in most other fruits would produce disease; but filbert plantations last a great number of years, and their bearing properties are rather enhanced than diminished by age. Each succeeding year's pruning leaves them in the same uniform shape as before, which is an open cup or basin-shaped centre, with the outer edges not more than five feet high. Of course, exact training to this cannot well be accomplished without tying, which is rarely adopted; but the cutting at the edges to the height above indicated leaves the tops parallel with the ground surface; and, though there are some branches near the outer edge between the ground and the edge of the basin spoken of, they are of less consequence than the framework of the tree forming the shape here described.

VARIETIES.—There are two or three varieties of filbert bearing local names; one with a thin shell, and the covering of the kernel of a deep pink colour, is esteemed the best at table, but it is not the best bearer. Cob nuts are more popular than filberts, being larger and producing more weight per acre, and they certainly keep longer; but so much depends on public taste, that those who grow them for market of course cultivate those most likely to pay best, taking into consideration the peculiarities of their position and other features. A large variety of *Cob*, called *Spanish Cob*, was much in fashion a few years ago, but it is less so now, in consequence of its lacking the

flavour of smaller nuts; but the amateur who wishes to grow a few for his own use might have a few of both filberts and cobs. The latter, after being harvested and put away, last longest; but while both are good, the filberts will be the greatest favourites.

MANURE FOR FILBERT PLANTATION.—Very rich manure, as farm-yard dung, is seldom used, as tending to too much grossness. In this district, where such large quantities are grown, woollen rags, or a sort of mill waste called Shoddy, which is a combination of cotton and woollen waste obtained in the carding of the one and dressing of the other, are largely employed. These substances, which to ordinary observers might almost appear "inert," are great favourites with the Kentish farmers. The rags, it is proper to observe, are chopped into pieces not larger than half the palm of the hand, the other separated by tearing it open. Other manures are also occasionally employed.

PREVENTION OF SUCKERS RISING AT THE COLLAR.—This is very effectually done by scooping away the earth all around the collar in October, forming a sort of basin about a yard or more in diameter, and exposing the main roots. The action of the frost on these roots is said to prevent the tree exhausting itself with suckers, and certainly none are produced when this treatment is adopted. The ground is again made level at the time of digging in March, the trimmings being all previously conveyed away; and if all go on well a good crop of nuts is looked for. As with all other crops, this is, however, not a certainty, as many extensive plantations did not last year produce on an average more than a bunch of nuts per tree—not sufficient to be worth looking for, while in favourable seasons from 10 to 20 cwt. of fruit per acre has not been uncommon. So much depends on the season, that with all the advantages of situation, skilful management cannot always command success in this instance any more than in many others; but well-directed skill, aided by other favourable conditions, certainly renders success more likely.—J. ROBSON, in *Journal of Horticulture*.

RELATING TO STRAWBERRIES.

1. *The Fragarium.*—This should be a dead flat and lying open to the morning, midday, and setting sun. It should be free from the shade of trees, and from the intrusion of their roots. A pump should be near.

1. *Soil.*—The best soil for strawberries is that which most abounds in potash, which is the grand constituent of a strawberry. Any soil can be made to bear them. They, like roses, have an affinity for alumina; but I would undertake to grow them in sandy or

chalky soil. The best compound is in equal thirds—clay, black dung from a decayed heap, and sand or ashes. If the land is stiff clay, unfertilized manure is better than decayed, and sand or sifted cinders, or burned field ashes are indispensable to keep the land open. The land, of whatever kind, should be deeply trenched.

3. *Planting*.—The best time for planting is in the spring, or early in the summer. The runners must be kept off. My new plantations, with the exception of spring-planted trial plants, were put in by the 24th of July, and are now strong plants that will fruit next year. August and even September may not be too late for sorts of quick growth and establishment; but they are too late for sorts generally, and for such seasons as we have lately had. Such late-planted sorts should be disfruited in the spring, and should have their runners kept off; and in the year following they will come out in their true form and will well repay for the delay. The runners, unless wanted, should be at all times cut off. After fruiting, dress the plants and water them "thoroughly;" they will then make fresh roots from the base and send up protective foliage, and look handsome in winter. A layer of two inches of new maiden earth from the country placed over the ground is a capital dressing.

5. *Manures*.—Cowdung is the best, as it contains more potash than any other manure. Guano and wood ashes, which also contain potash, are good, but they must be used prudently. I use chiefly black, decayed dung, half-inch bones, and nitro-phosphate; the two last I use at planting time, the other is used at all times. I also use liquid manures at the spring, which I put, not into the ranks, but between the ranks (2 feet apart); and this, washed down by the rain, affords food for the plants in fruiting time; this is the safest place for guano. If guano is used as a liquid, one handful to a stable-bucket of water is sufficient; this may be put into the ranks.—W. F. RADCLIFFE, in *Florist and Pomologist*.

HAMILTON HORTICULTURAL SOCIETY'S EXHIBITION.

The second Exhibition of the Hamilton Horticultural Society was held in the Mechanics' Institute, on Wednesday the 8th inst. The day was remarkably fine and very suitable for the occasion. In the afternoon and evening the Hall was crowded by the youth and beauty of the city, old and young appeared seemingly much interested, and to enjoy the scene. The exhibition as a whole, was one of the best we have seen in Hamilton as a July show. Flora was more fully represented than she has been hitherto at the same period of the season. The foliage plants from the gardens of W. P. McLaren,

Esq., and John Brown, Esq., were worthy of the highest commendation. The Caladiums, Marantas, Coleuses, Crotons, &c. &c., were beautiful, *Cyanophyllum Magnificum* was in both collections. This new noble stove plant is a native of Central America and highly worthy of its name. It is said to be without exception one of the finest plants yet introduced, in its truly magnificent large oblong ovate leaves, the upper surface is of a remarkably rich, deep, metallic tinted olive green, which is transversed lengthways by a large prominent silvery grey mid rib, the entire surface again is crossed by innumerable light veins (nerved as it were) diverging horizontally from the centre mid rib to the margins. Grand and beautiful it is. The *Fuchsias* and green house plants from the gardens of John Brown, John Young, and R. J. J. Esquires, were good and much admired. The scarlet *Geraniums* from the gardens of Isaac Buchanan, Esq., M.P.P., Auchmar House, Claremont Park, were much commended for their fine healthy foliage and large trusses.

It is pleasing to notice that the amateurs are making considerable advancement in many respects, their production of window and other plants was very creditable, also their cut flowers and table bouquets.

The fruit departments was well represented, Cherries, Gooseberries, Currants, Red and White Raspberries &c. &c., with some very fine grapes from the Orchard Houses of W. P. McLaren, Esq. The gooseberries and currants were not fully ripe but very large and fine. The most attractive feature in the fruit department was the fine display of Orchard House trees in a full crop of fruit, some grapes and peaches ripe, and others fast approaching that stage these trees were from the gardens of John Young, W. P. McLaren and T. C. Kerr, Esquires, all very creditable to their owners and their gardeners; also an indication of what may be done. Fruit culture must advance and we trust that the time is not far distant when many will see its importance, put their shoulder to the wheel and push onwards.

There was a good display of Vegetables of all kinds, Cabbages, Carrots, Peas, Onions, Potatoes, Salads of every description.

The whole went pleasantly off, giving a good return to the society.

GEORGE LAING.

Hamilton, 17th July 1863.

THE WINDING UP OF THE DWARF APPLE TREE QUESTION.

TO THE EDITOR OF THE AGRICULTURIST.—My excuse for not answering Mr. Arnold before this is on account of the spring work keeping me so busy, but now that it is past, and election is over, we must again return to duty, or to the Dwarf Apple Trees. And in doing so I will be as brief as possible, only referring to a few of the principle points.

Mr. Arnold first says, the discussion should be ended in the same year in which it began; or it might inflict a punishment upon your subscribers, if our communications are uninteresting. Let them speak for themselves, or, Mr. Editor, you should not publish what would be a damage to your many readers. He next says, he is unable to perceive in my last article one idea on the subject that was not replied to in his last, and he calls on you for proof; but it seems you remain silent, I suppose unable to decide in his favour. He does not appear to be well pleased with my artificial way of making dwarf trees, notwithstanding the authors and witnesses that I have produced in proof of that being the way to make such trees. But he still asserts that his trees bear when two or three years old, which we do not deny, for there are exceptions to general rules in all cases; but it would be much more satisfactory to us for him to produce evidence that others have done so too; which he has not done, and it looks strange to me that his trees bear when mine and others do not. I have looked over your fruit growers' report, where you have had replies from over sixty fruit growers, and I find not one who says their trees bear so young, and remain so small as Mr. Arnold's. Again, Mr. Editor, I would not have you overlook what he said in his former article, that his dwarf trees had grown 35 feet in circumference in ten years. Will standards grow larger in that time? And now he defies me to make his trees grow like others. Again, when I requested him to send me the trees, payable when they answered his description, which of course would be in a year or two, he says ten or twelve years would be too long for him to wait. Now sir, if they grow so large and it takes them ten or twelve years to bear or prove themselves to be dwarf trees, they won't answer me. Still, he says, his trees begin to bear when two and three years old. Who can unravel these mysteries? Let your readers decide how it is.

Again, he says, why not accept of my proposal and put the trees into disinterested person's hands that they may be tested? This I answered in my last. Again, he says, if I send my order accompanied with the cash the trees will be sent. This, Mr. Arnold, I have been in the habit of doing, and by your calculation have always been cheated. Therefore you see the necessity of being very cautious. And we hope that what has been said will be a lesson to others in making them careful from whom they get their trees. For if there are real dwarf trees, as you say there are, we seldom get them, but the nurserymen substitute standards in the place of genuine dwarfs. If so it will shortly be known, and let a stop be put to such deception and the nurseryman exposed. Here let me say, that I seldom get my order filled by the nurserymen correctly, but find when they come to bear that something has been substituted that I did not want. Under these circumstances no wonder

the country is so backward in growing fruit. But, Mr. Arnold says, every thing sent out from his establishment is warranted correct. This I am very glad to hear, and would recommend him to be well patronized. I have received the half dozen dwarf trees from Mr. Arnold as he promised, and with many thanks, hoping that some time I shall be able to return the compliment. I will try and do him justice in their cultivation, and report accordingly.

You s, &c., R. B. WERLEN.
Pictou, July 15, 1863.

Veterinary Department.

THE HORSE—STRUCTURE AND DISEASES OF THE EYE.

Among the many ailments of the horse, we find injuries and diseases of the eye of a very common occurrence in this country. Before proceeding to mention the diseases, it will be preferable to give a short description of the anatomy of the eye.

The organ of sight consists of the eyeball and the accessory appendages, or those parts which are employed to move, adjust, and protect it from injury. The globe or eyeball is of a spherical shape, composed of a membranous sack, in which is contained transparent humours which serve as a reflector to the light. The eyeball is attached to the orbit by several muscles, and reposes upon a mass of adipose tissue, which acts the part of a cushion, serving to maintain the eye in its proper position. The membranes or tissues are three: First, the sclerotic and cornea; the second is made up of the choroid, iris, ciliary processes, and ciliary ligament; the third is formed of the retina and its continuation. The humour or reflecting mediums are also three, viz., the aqueous, crystalline lens, and vitreous humour. The sclerotic coat is a dense white fibrous membrane extending from the optic nerve and continuous with its sheath, to the circumference of the cornea, forming nearly four-fifths of the whole external tunic. The tendons of the intrinsic muscles of the eyeball become expanded over this coat, forming a thin, glistening layer, known as the white of the eye. The internal surface of the sclerotic is in contact with the external surface of the choroid coat, being united by delicate cellular tissue and minute nervous filaments and arteries. The anterior opening of the sclerotic is of an elliptical form, presenting a sort of double-bevelled edge, into which is inserted the cornea.

The cornea occupies the anterior portion of the eyeball forming the remainder of the external tissue, is perfectly transparent, and is inserted like a watch glass in the sclerotic, being firmly attached to the latter. The outer surface is covered by a continuation of conjunctives, the inner surface by a delicate membrane, from which is in part secreted the aqueous humour.

The second tunic is formed of the choroid, iris, ciliary processes, and ligament; the first of these is a very thin vascular membrane of a deep brown colour, situated under the inner side of the sclerotic, and having the same general form, its internal surface in contact with the retina posterior, the choroid is pierced for the passage of the optic nerve, near the junction of the sclerotic and cornea, it is connected with the ciliary ligament, which is continuous with the circumference of the iris. The choroid consists of a network of bloodvessels, and made up of three layers; the internal one contains granules of black pigmentary matter. At the posterior wall of the choroid the black pigment is replaced by a bluish layer called the tapetum lucidum, or bright carpet. The ciliary ligament is a white ring of circular fibres, forming the union between the external and middle tunic of the eye, also serving to connect the sclerotic coat and cornea with the iris or curtain.

The ciliary processes are formed by the plates and folding of the middle and inner layer of the choroid. They vary in number from sixty to eighty.

The iris—so called from its variety of colour—is a thin curtain suspended in the aqueous humour, immediately in front of the crystalline lens, perforated in the centre by an elliptical opening called the pupil, (this opening in the human subject is round). The circumference of the iris is connected with the choroid and ciliary ligament. The anterior surface is marked with a number of lines, all converging towards the pupil. The posterior surface is covered with a deep coloured pigment called the uvea. The iris is made up of two sets of involuntary muscular fibres, radiating and circular. The former converges towards the pupillary opening, and has the power of dilating it, the latter becomes blended with the termination of the radiating fibres, producing contraction of the pupil. The third coat consists of the retina and its continuation. The retina is the terminal expansion of the optic nerve, and extends over the internal surface of the choroid between it and the vitreous humour,—is made up of three layers.

The three transparent humours are the aqueous, in front; the crystalline lens, in the middle, and the vitreous humour behind. The first is perfectly transparent, and composed principally of water, secreted by the lining membrane of the chamber in which it lies, and capable of being renewed in case of a puncture letting it out.

The vitreous humour occupies about four-fifths of the whole interior of the eyeball; is also perfectly transparent, and of the consistency of thin jelly, having albuminous matter, and enclosed in a delicate membrane called the hyloid membrane, from the inner side of which numerous laminae or plates are sent inwards,

forming cavities which are for the purpose of keeping the vitreous humour in its form.

The crystalline lens is situated immediately behind the pupil, in a cavity in the anterior portion of the vitreous humour, and is surrounded by the ciliary processes, which slightly overlap its margin. The lens is covered by a transparent elastic membrane, called the capsule of the lens.

The appendages of the eye are the eyebrows, the eyelids, the membrana nictitans or haw, the conjunctiva and the lachrymal apparatus. The eyebrows in the horse are merely rudimentary and are those eminences formed by processes of frontal bones, furnished with a few scattered hairs.

The eyelids are those two moveable curtains which serve to cover and protect the eyeball; the upper eyelid is the larger and more moveable of the two, their external surface is covered with fine soft hairs, internally they are lined with the conjunctiva or continuation of the membrane covering the eyeball. Forming the framework of the free border of the eyelids are two fibro cartilaginous plates called the tarsal cartilages, within which are lodged the ciliary follicles which secrete a fluid serving to lubricate the eyelids.

Situated in the nasal angle or inner canthi is the membrana nictitans or haw, composed of fibro cartilage of an irregular form, being thick at the base and thin anteriorly, behind it is continuous with the pad of fat lodged amongst the different muscles of the eye. By the contraction of the straight muscles of the eye the globe presses upon the pad of fat, on which it rests, and thus forces the membrana nictitans outwards, and more or less covers the transparent cornea. Its use is to remove any offending agent from the surface of the eye in some diseases, as in Tetanus, it is forced outwards and remains so. When the eye is irritated the haw is always prominent, and in some cases is mistaken for the cause of the irritation, and removed. The operation is, not only useless but decidedly injurious.

The conjunctiva is the mucous membrane of the eye, is continuous with the skin of free borders of the eyelid, lines its whole inner surface, also covering the anterior portions of the membrana nictitans, likewise the cornea, and is continued down the lachrymal duct, becoming continuous with the mucous membrane of the nose.

The lachrymal apparatus consists of the lachrymal gland and duct. The gland is situated between the external straight muscles and orbital process of the frontal bone. The secretion from this gland leaves by numerous straight ducts, which open out on the upper eyelid. This secretion constitutes the tears which are intended to wash the conjunctiva clear of any foreign body. The tears pass from the outer to the inner angle to the lachrymal duct and are

then conveyed by means of the duct to the nose.

A very common disease of the eye is simple Ophthalmia or conjunctivitis. This proceeds from many causes; the most common is the introduction of foreign bodies into the eye, as a lash with a whip, chaff or hay seeds, also caused by foul stables, especially in hot weather, when there is a great quantity of ammoniacal gas generated, arising from the decomposition of the urine, &c.; this disease also occurs sometimes as an accompaniment of catarrh or cold in the head.

The symptoms of simple ophthalmia are more or less closure of the eyelid, watery eye, with a copious secretion of tears, the conjunctiva is swollen and in some cases attendant upon external injuries, there is a protrusion of the conjunctiva beyond the eyelids, also of the haw, and generally more or less cloudiness of the cornea, owing to the nutrition of the part being interfered with.

The treatment of this disease depends much on the cause, hence the necessity of careful examination. If caused by a foreign body it must be removed, which can be done either by the introduction of a feather or removing it with forceps. The first layer of the cornea is covered with scaly epithelium, and chaff, hayseeds, &c., are very liable to become embedded therein; in some cases these require a little force to extract them. After the offending agent is removed, the application of cold water to the eye is useful, also some mild astringent, as the sulphate of zinc, also a small dose of laxative medicine conjoined with low diet, and place the animal in a cool, darkened and well ventilated horse box.

The cornea is very liable to be injured from blows or tears, and these injuries are always accompanied by symptoms of conjunctivitis. The tears may simply occur on the outer layer or they may go through the whole coat, when the aqueous humour escapes. In injuries from blows, cold cloths kept close to the eye are useful; this keeps the eyelids closed, supports the lacerated parts, and also prevents the action of the air on the wound. By such treatment, even when the aqueous humour has escaped, it is astonishing how soon it will form again.

In all wounds of the cornea lymph is poured out, giving the cornea a dull leaden appearance. When the eye has this dull appearance and no bloodvessels appear, there is a probability of its being removed; if changing to a pearly whiteness, there is little chance of ever getting rid of it. After the inflammation has subsided stimulants must be applied; as the nitrate of silver, the sulphate of zinc, &c.

In young dogs the cornea is subject to ulceration, as a sequel of distemper. The first symptom of this disease is a slight opacity in the centre of the cornea; this opacity is followed by the appearance of a small hole or

ulcer, which, if left alone, gradually extends over the whole cornea. This ulceration depends on the nutrition of the cornea being destroyed, followed by disintegration. It is best treated by a solution of the nitrate of silver, about fifteen grains to the ounce of water.

ROARING IN HORSES

Roaring is usually the result of structural alterations within the larynx or upper part of the windpipe bordering on the trachæ; in mild cases of roaring, we usually find a thickened state of the membrane, lining the upper portion of the respiratory passage, and when roaring is occasioned by thickening of this membrane, its degree depends on the ratio of decrease in the calibre of the tube breathed through.

Roaring is a very aristocratic disease; many of the very best and fastest horses in England were and are now, notorious roarers. Flying Childers, as fast a horse as ever wore horse shoes, was one of the worst roarers ever known; the story runs that when Childers was at full speed his roaring resembled juvenile thunder!—he could be heard when distant half a mile!

The worst form of roaring (as Paddy says) is whistling. This is the sharp shrill note only occasioned by the thickening of the lining membrane of the primary passages of respiration, but by alterations in the form and structure of the larynx—the larynx being, in popular language, known as the "voice box."

Roaring is more prevalent among stallions than mares and geldings, and the kind of horse most subject to it is the one having a thick chunky neck, and having the angles of the jaws in very close proximity with the neck.

Roaring scarcely, if ever admits of a radical cure, and when of hereditary or congenital origin a cure is impossible. A roarer should never be encumbered with a check-rein, for it has the effect of causing undue pressure on the larynx, and thus augments the difficulty.

Roaring can however be relieved by an operation known as tracheotomy, which is performed at a point a few inches below the larynx.

At a late meeting of the Imperial and Central Society of Veterinary medicine, M. Leblanc read a communication on tracheotomy which was performed on a carriage horse. "The operation had been performed because the horse was a severe roarer, and he wore the tube eighteen years and a half, doing fast work all the time. The animal was destroyed at twenty three years of age, the owner not desiring to make further use of him nor to sell him. Since the operation, Leblanc had not observed any change in the horse, except a depression of the bones of the face. After death, the larynx was found very narrow, the mucous membrane and submucous cellular tissues were thickened, the epiglottis deformed, very obtuse, and everted at its free margin. The changes in the larynx were the original cause of roaring. The depression

of the bones of the face was connected with constriction of the nasal chambers, and was evidently secondary to the change in the course of the air in the process of respiration. The parts of the trachea in contact with the tube, had undergone a transformation, into very hard tissue, which replaced both mucous membrane and cartilaginous tissue. It filled the trachea above the point where the tube had been introduced, and, intermixed with this firm fibrous deposit, was cartilaginous and osseous tissue, which offered great resistance to the scalpel."

Boaring, thick wind, whistling &c., are often the sequel strangled of influenza, laryngitis and other affections of the respiratory passages, and hence may have an accidental origin; in such cases we entertain a hope of doing some good by means of medicinal agents and counter irritation.

The medicines which have proved most successful in my practice are as follows:

Iodide of Potass, 4 ounces; Fluid Extract of Stillingia, 1 pound fluid. Dose: two ounces daily, in the form of drench.

The region of the throat should be rubbed daily with a portion of the following: Spirits of Camphor, 6 ounces; Diluted acetic acid, 12 ounces; mix. G. H. DADD, V. S.—*Prairie Farmer*.

SIMPLE RULES ON SHOEING.

BY W. JONES, M. R. C. V. S., LONDON.

1st. After having taken off the old shoe, shorten the toe, and remove all the dead and loose parts of the hoof. Do not cut the sole or pare the frog, except when the foot has received an injury from a nail or otherwise, when it must be cut out.

2nd. Let the shoe be of equal thickness, or rather thinner at the heel. The ground and foot surface should be perfectly level. The shoe should lay light on the heel. Too many nails are objectionable, and these should be kept as far as possible from the heels.

3rd. For the hind feet there is no objection to calkins, though they are of doubtful benefit. Horses travel better without them. The hind shoes are made thicker at the toes than at the quarters, the nails also can be put closer to the heels without causing inconvenience.

4th. Side clips should be avoided, they destroy the hoof, the same is the case when the nails are too close together. The feet should never be rasped, as it destroys the enamel of the hoofs, renders them brittle, and causes sandcrack, and consequently lameness.

5th. Expansion is a fatal error which has led to many abuses in shoeing, such as paring off the sole and frog, rasping off the hoof, &c. The elasticity of the foot, which is however very limited, exists only in the upper part of the hoof, principally round the coronet. On the lower part and the toe it is nil.

Miscellaneous.

THE DANDELION.

This plant, (*Leontodon Taraxicum*) has long been naturalised in Canada, and has become in many places a perfect nuisance. Its edible and medicinal qualities appear on this side the Atlantic to be but little known. On the continent of Europe it is turned to a valuable account as appears from the following statement, which we find in a recent number of the *Scottish Farmer*:

While this well-known plant is allowed to become a nuisance and a pest in this country, our neighbours the French, whom we laugh at for eating frogs, teach us how we might not only rid ourselves to a great extent of this troublesome weed, but also turn it to a useful, and even a very profitable account. It is an ingredient in their spring soups and salads, and serves as a substitute for spring spinach before that vegetable attains a useful size; and when forced during winter and blanched, forms an excellent substitute for the "Barbe de Capucin" (i.e., blanched scaccory), and is both nutritious and medicinal, being a valuable stomachic and dietic. The roots are as valuable as the leaves, and both might be made use of by those living in towns who have no garden; for both roots and leaves may got in abundance for the digging up, and may be used as soon as gathered; or the roots planted in a box of sand in a dark cellar or even in pots set in the window sill, much wholesale matter might be obtained from.

To show to what useful and profitable an extent this plant is applied on the continent, we quote from the "Proceedings of Comice Horticole de Main et Loire," a statement of the supplies sent from the meadows on the banks of the Loire alone to the Paris markets, and this constitutes only a small part of the quantity yearly consumed in that city. During winter and the beginning of spring the female peasantry go off in the morning, often before daylight, and especially in frosty weather, to the grounds where this plant is found in a wild, uncultivated state. "There they collect the plant which is the object of their search, and return, sometimes late at night, bent under a burden which they have gone six or eight miles to seek for, and the value of which is from 1s. 0d. to 2s. 6d., according as they find places where the plant is less or more abundant. But, before they touch their hard-earned gains, nearly as much more time must be consumed in clearing the dandelions, and rendering them fit for the eye of the purchaser. Here, however, the work changes hands; it is no longer the same women who take this part of the labour, but the children and other members of the family who are unable to make these long

and fatiguing journeys now step in. Thus the gathering a plant scattered over the fields gives employment for nearly three months to all the women and children in the above populous districts who are not otherwise engaged, and greatly alleviates the hardships which their families would often have to endure."

As regards the amount of traffic to which the dandelion gives rise, the authorities of two railways have furnished exact statements of the quantities carried. On the Bohalle line, from the 8th January to the 26th April, 72 tons 17 cwt. were forwarded to Paris; on that of Saint Mathurin, 101 tons 1 cwt.; the Menitre Railway is estimated to have taken 100 tons, and that of Trelazé 25 tons; so, without taking other lines into account, these four alone carried about 300 tons of dandelions to Paris, the carriage of which by passenger train came to £1,200 in three months.

The dandelions consist of two kinds, the green and the blanched; the former comprises about four-fifths of those carried, or about 240 tons, and their value may be taken at £1,920; the blanched, which constitute the remaining 60 tons, may be set down at £1,080, and the total value of both classes at £3,000.—*Scottish Farmer*.

SERVANTS AND MISTRESSES.—Almost every woman I ever met with was, as regards servants either a tyrant or a goose. See how much better we can manage our men servants. Too many women are naturally bullies, and dearly love to hold the rod over their weaker sisters. Hang it, I say, make the usual allowance for human nature, and you will find servant girls just as good as any other class of your fellow-creatures, and a good deal better than many. Look at what the poor things have to put up with—squalling children to irritate 'em, tyrannical and exacting mistresses hunting them about from pillar to post, worrying their powers of work out of 'em. Do you remember the story of Mahomet's youth, how it was said that an angel took his heart out of his body, and wrung all the black spots of blood out of it, so that it was pure ever after? I fancy we want some such operation to be performed with the servant girls we engage. We expect to get an angel-of-all-work, or a nursing or cooking angel at the cheap rate of seven—nine—fifteen guineas; per annum, instead of what we do receive, a human being like ourselves. Hang it, my sister, you get hold of a young girl, sometimes she is remis in her duties—slow, stupid—how do you know the cause of it? You can't look into that girl's heart. Perhaps she has mightier things to think of even than you and your seven guineas a year. Perhaps she has subjects on her mind for which she would pitch you and your coppers to the wind. She hasn't cleaned your breakfast-room as well as usual; perhaps she had other things to think of. Don't say she ought not to have, she is human, you know. Perhaps the

butcher's boy has been fickle—he is but a butcher's boy you see, but she loves him—she is a woman she loves him, and she would see you and your breakfast-room at Hanover for one of that butcher boy's mischievous smiles. Now do not blame her for that; you can't, you dare not do it. Who knows what tears have blinded her eyes and prevented her scouring your stewpans as they ought to be scoured—perhaps a sister has come to shame—perhaps a brother shot dead in some battle of which we read with pride—perhaps she is ill in body as well as in mind; she has to do her work, nevertheless, and to stem the torrent of your wrath, if she does not perform it well. It's no easy matter to work regularly, in the teeth of illness, of sorrow, of anxiety, of jealousy. I should like to see you scouring stewpans, or dusting furniture as regularly and accurately when your lover had turned you adrift, or your father had lost all his property. I should like to see if you could devote the whole of your attention to the legs of chairs and the cobwebs in the corner, never straying in thought to the faithless man or the ruined father, even though you did see hanging up in the future the tempting prize of—seven guineas. Ladies should take more interest in their servants, not regard them as washing, ironing, wringing, nursing machines of an inferior quality; and then the servants themselves would learn to regard their mistresses as something more than mere paying machines, to be avoided and dreaded except on the pay day. Look here—you engage a young girl, age sixteen, face pretty, manners good, just give her credit for possessing a heart and a temper, the "feelings, affections, passions," which Shylock claims for his Jewish brethren. Measure, if you like, her temper and feelings by your own, allowing liberally for the difference in station, which will be in her favour, keep them steadily in mind, and then you ought to be a good mistress. No followers allowed, perhaps you say. Hang it, if you lay down such a rule you try to do what fleets and armies have been unable to do—bar the gate against love. It's a credit to be in love. You don't suppose she intends to sell her life for your miserable seven guineas, do you? You don't suppose that she gives up the hope of dusting a kitchen of her own, and sitting by her husband's fire, for the sake of your cast-off garments and perquisites? The life even of a servant girl is too valuable for that. Here, where's that book, "Companions in My Solitude;" what does "Helps" say about that? Here it is, page 113. "What does a lady mean who lays down such a law in her own household? Perhaps she subscribes to some abolition society, which is a good thing in as far as it cultivates her kindly feelings towards an injured race. But does she not know that by this law as applied to her own household she is imitating in a humble way one of the worst things connected with slavery?" Further on

he says, "For my own part I could not bear to live with servants who were to see none of their friends and relations. I should feel I was keeping a prison, and not ruling a household.—*J. J. B., in The Queen.*

A TESTING APPARATUS FOR EXPLOSIVE OILS.—At a recent meeting of the Franklin Institute, Philadelphia, Mr. Howson exhibited a patent naphthometer, or benzine detector. This is the invention of Messrs. H. J. Smith and Woodruff Jones of this city. The instrument consists of a reservoir with a tightly-fitting cover, from the top of which projects a tube, surrounding a wick tube. A thermometer also passes through the cover, and occupies such a position that its bulb comes within a short distance from the bottom of the reservoir. In order to determine the temperature at which the oil gives off sufficient vapour to cause an explosion, the oil to be tested is poured into the reservoir, the wick is lighted, and the instrument is placed on a stove, or over the flame of a lamp. At a temperature which varies in proportion to the quantity of explosive ingredients contained in the oil, the vapour is given off, and, mixing with the air in the reservoir, passes up through the space between the wick tube and the larger tube, and explodes when ignited by the flame, thereby extinguishing the light. The height of the mercury in the thermometer will determine the quality of the oil. The contrivance is very simple and cheap, and enables anyone to ascertain in a few minutes whether an oil is of a quality to be burned with safety.

THE WREN—ITS VALUE.—Among the insect killing birds the wren is perhaps the most useful, for its habits are of the most industrious character. The European wren is nearly the smallest bird there known, and is found prying into holes and crevices, and about old buildings, searching for insects. The winter wren, to be found in the Northern and Middle States in winter and often remaining until spring, is thought to be identical with the European wren. Our wrens have a larger tail, and are familiarly known in all parts of the country. They will reside about dwellings and even in crowded cities. We have found that however great the number of wren houses we may place in trees, that every one will have a tenant, and "the more the merrier," for they consume insects only, and are most indefatigable in finding them.—*Working Farmer.*

LOVE OF THE FRENCH FOR FLOWERS.—The passionate love of flowers is a marked characteristic of the Parisians, and the sale of flowers is in Paris an extensive and lucrative branch of trade. It is computed that the various little patches of ground in the vicinity of the French capital, appropriated to floral cultivation, realize an annual income of 32,000,000 francs, and give employment to 500,000 per-

sons. In Paris alone there are no fewer than 284 florists; and on occasions of public festivity their conjoint traffic not unfrequently amounts to 70,000 francs. At a *fete* given last season by one of the foreign ambassadors the cost of the flowers was 22,000 francs.

NATURAL BAROMETERS.—Chick-weed is an excellent Barometer. When the flower expands fully, we are not to expect rain for several hours; should it continue in that state, no rain will disturb the summer's day. When it half conceals its miniature flower the day is generally showery; but if it entirely shuts up, or veils the white flower with its green mantle, let the traveller put on his great coat. The different species of trefoils always contract their leaves at the approach of a storm; so certainly does this take place, that these plants acquire the name of the husbandman's barometer. The tulip, and several of the compound yellow flowers, all close before rain. The tulip, and several of the compound yellow flowers, all close before rain. There is a species of wood-sorrel which doubles its leaves before storms. The baubinia, or mountain ebony, capial and sensitive plants, observe the same habits.

HAY AND CORN SHRINKAGE BY DRYING.—The loss upon hay weighed July 20th, when cured enough to put in the barn, and again Feb. 20th, has been ascertained to be 27½ per cent. So that hay at \$15 a ton in the field is equal \$20 and upward when weighed from the mow in winter. The weight of cobs in a bushel of corn in November ascertained to be 19 lbs., was only 7½ lbs. in May. The cost of grinding a bushel of dry cobs, counting handling, hauling and miller's charge is about one cent a pound. Is the meal worth the money?—*Scientific American.*

Genuine tea is said to be growing on a large tract of land in Clinton county, Penn. One gentleman, who owns a farm on which the herb is indigenous, says that his attention was first called to it by a native Chinese, who declared it to be the genuine China tea plant. The gentleman uses it on his table and no one suspects it not to be the imported article. A gentleman of the medical profession, residing in Crawford county, informed us that he had tested the Clinton tea and pronounced it *simon pure*.

Editorial Notices, &c.

THE MUSEUM.—The Secretary of the Board of Agriculture has to acknowledge with thanks the receipt from Mr. John Waddell, Burnside Farm, Township of Sarnia, County Lambton, of a very fine sample of wheat in the straw.

pulled with the roots attached, for the Agricultural Museum. This sample is over 5½ feet in length, but notwithstanding this great height, appears to have stood very erectly, and has a heavy, well filled ear. The following particulars are given :

"Blue stem variety, grown on sod 25 years old, broken up in July 1862, sown 20th September, reaped 20th July, 1863. Crop exceedingly heavy, and scarcely touched with the midge, whilst fields in the same neighborhood were half eaten up."

We shall be much obliged to other gentlemen for similar favours.

THOROUGH-BRED SHORT HORN FOR SALE.

MORETON DUKE, got by Mr. Stone's Bull 3rd Grand Duke, 2292, calved 9th June, 1860.

William of Oxford, got by Mr. Stone's Bull 12th Duke of Oxford, calved 19th November 1859.

David, got by Sir Charles, a son of 3rd Grand Duke, calved 1st March 1861.

Marquis of Oxford, got by William of Oxford, calved 20th March 1863.

Warwick, got by Moreton Duke, calved 26th March 1863.

Terms very reasonable.

W. WILLCOCKS BALDWIN.

Larchmere, Oak Ridges.
tf.

April, 1863.

THOROUGH BRED STOCK.

THREE yearling Durham Bull two Galloway Bull Calves, two imported Ayrshire Bulls, yearlings, for sale.

GEORGE MILLER,
Markham.
tf.

April, 1863.

THE CANADIAN AGRICULTURIST AND JOURNAL OF THE BOARD OF AGRICULTURE OF UPPER CANADA.

THIS LONG ESTABLISHED PERIODICAL is published in Toronto on the 1st of each month, making 12 numbers in the year.

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EDITORS:

Professor Buckland, University College, Toronto. Hugh C. Thomson, Secretary Board of Agriculture of Upper Canada. Andrew Smith, Licentiate of the Edinburgh Veterinary College and Consulting Surgeon to the Board of Agriculture of Upper Canada.

All orders to be addressed to the Secretary of the Board of Agriculture, Toronto.

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Orders for the half volume, commencing 1st July, taken at 25 cts. per copy; discount for a number of copies in same proportion as above.

AGRICULTURIST OFFICE. }
Toronto, June, 1863. }

TORONTO MARKET PRICES.

TORONTO, JULY 31, 1863.

Fall Wheat, per bushel.....	\$0 85 to \$0 90
Spring Wheat, "	76 " 82
Barley, "	60 " 70
Peas, "	50 " 55
Oats, "	45 " 46
Rye, "	56 " 60
Beef, "	4 00 " 5 00
Mutton, "	4 00 " 4 50
Potatos, per bushel, old.....	25 " 30
" " new.....	70 " 80
Fresh Butter, per lb.,.....	12½ " 14
Eggs, per doz.....	14 " 16
Chickens,.....	30 " 35
Calves, each,.....	3 00 " 5 50
Sheep, each.....	3 00 " 4 00
Beef, per 100 lbs.....	3 00 " 5 00
Hay, per ton,.....	8 00 " 9 00
Straw, "	9 00 " 10 00
Hides, per 100 lbs.....	4 50 " 5 00
Calfskins, per lb.....	8 " 9
Sheep Skins.....	25 " 30
Lamb-skins, each.....	40 " 50
Wool, per lb.....	35 " 37
Plaster of Paris, per barrel ..	95 " 1 00
Salt, per bbl.....	1 45 " 1 47

BLOOD STALLION FOR SALE.

FOR SALE, a Blood Stallion, "*High Flyer*" six years old, bright bay, 15 hands 3¼ inches high, Sire "*Sir Tatton Sykes*," dam by "*Somonocodrom*."

Terms cash, or six months' credit on good security. Apply to

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Davenport P. O., near Toronto.

March 20th, 1863.

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AGRICULTURAL HALL,

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One Horse Ploughs \$5 00 to \$ 7 00 each.
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Patterson & Brothers, Manufacturers, Belleville.
" " wood Nos. 4 & 5 0 00 "
" " " No. 6..... 16 50 "
One Horse Hoes or Cultivators.... 8 00 "
Straw Cutters, for horse or hand
power 30 00 "

Draining Tools of Superior Quality, Spades,
Shovels, Manure Forks, Potato Forks, Hay
Forks, Cradles, Scythes, Snaiths, Iron Rakes,
Hoes, Hand and Horse Hay Rakes, &c, &c., &c.

JAMES FLEMING & Co.

TORONTO, Dec. 16th, 1862.

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mented Flower Pots, Vases, Propagating-Glas-
ses, Fish Globes, Aquariums, Green-house Sy-
ringes, Conservatory Pumps, Water-pots with
patent brass roses, Fumigators, Saynor's ce-
lebrated Pruning and Budding Knives, Bass Mats,
Hedge Shears, Transplanting Trowels, Grass
Shears with long handles, Thistle Spuds, Fancy
Rakes and Hoes, Hatchets, Hammers, Sets of
Garden Tools for Boys, Large Penning Shears,
Garden Lines and Reels, Gardener's Gloves, &c.,
&c, &c.

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THE PROVINCIAL EXHIBITION

OF THE

AGRICULTURAL ASSOCIATION
OF UPPER CANADA,

Will be held at Kingston,

On the 21st to 25th September next.

PERSONS INTENDING TO EXHIBIT
will please take notice that the entries of
articles in the respective classes must be made
with the Secretary, at Toronto, on or before the
underectioned dates, viz.,

Horses, Cattle, Sheep, Swine, Poultry, on or
before Saturday, August 5th.

Grain, Field Roots, and other Farm Products,
Agricultural implements, Machinery, and Man-
ufactures generally, Saturday, August 9th.

Horticultural Products, Ladies' Work, the
Fine Arts, &c., Saturday, September 12th.

Prize Lists and Blank Forms for making the
entries upon, can be obtained of the Secretaries
of all Agricultural Societies and Mechanics'
Institutes throughout the Province.

HUGH C. THOMSON,

Secy Board of Agriculture.

Toronto, July 28, 1863.

[POST FREE.]

THE
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AND
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OF UPPER CANADA.

VOL. XV. TORONTO, SEPTEMBER, 1863.

No. 9.

THE APPROACHING EXHIBITIONS.

The Provincial Exhibitions of both sections of this Province, and the State Fairs of several of the adjoining States, will take place during the present month. The Lower Canada Show, at Montreal, and the New York State Show, at Utica, take place on the same week, 15th to 18th inst. Some of the Agriculturists of Upper Canada, will doubtless compete at one or other of these Shows, before attending our own at Kingston the following week, and mere visitors may, without much difficulty, if they choose, be present at both of them long enough to have the advantage of inspecting the more important departments pretty fully.

The prospects of our Exhibition at Kingston on the 22nd to 25th inst., are sufficiently encouraging to warrant us in believing that it will not suffer in interest and importance by comparison with any of its predecessors. There are some classes, however, in which the entries are not yet so numerous as they should be, and we would recommend farmers and others who have products which they think of exhibiting, in any of the classes in which entries can yet be taken, to send them forward without delay. In Fall Wheat, particularly, the representation, judging from present appearances, is likely to fall much below an average, there being at the time of writing, but very few entries. This may be owing to some extent, to the character of the season, which has not been very favourable to the production of a fine sample. But as the large number, and excellent quality of the samples of fall wheat, has heretofore been such

a characteristic feature at our Upper Canada Provincial Shows, it would be a subject of regret if they should fall off in this respect, and we would therefore urge, if it be not too late when this reaches our readers, that those who have it in their power will do all they can to remedy this probable falling off. In the Horticultural Department we have every reason to suppose that the Exhibition will be as attractive as usual. There is still time to make entries in this department, and they should be sent to the Secretary of the Association, at Toronto, at once.

We would remind intending exhibitors, that all articles except live Stock must be on the Exhibition grounds on Monday, September 21st. Live Stock must be there by Tuesday, 22nd, at noon. Exhibitors of heavy articles, such as heavy machinery or implements, are recommended to have them on the grounds, if possible, by Saturday 19th, so as to afford time to place them properly.

The inducements offered to visitors and exhibitors in the reduction of railway and steamboat fare will be greater than on previous occasions. The Grand Trunk Railway will charge passengers and articles going to the Exhibition one full fare on going there, and will carry back the same, free; owners of stock, implements, &c., on their return being required to show that they have not obtained such stock, &c., since going to the Exhibition. The reduction of fare will commence on Wednesday previous to the Exhibition, and last until the evening of that day fortnight, thus extending over fifteen days. It is supposed that the other Railways and Steamboats will offer the same liberal terms.

EDITORIAL NOTES DURING A TRIP EAST.

After having attended a meeting of the Board of Agriculture, the latter end of July, at Kingston, we resolved on returning to Toronto by land, devoting about a week to the journey. We had thus an opportunity of calling on a considerable number of agriculturists, through the several districts we had to pass, of observing the state of the crops, and the different systems of farm practice; and of obtaining much valuable information. This article will therefore be made up from some of our jottings on the way.

We found the Local Committee at Kingston actively at work in making preparations for the approaching exhibition; and everything indicated a unanimity and strength of purpose that will ensure the completeness of the arrangements. The corporation of the city of Kingston, and the council of the united counties having made liberal grants, the accommodation provided for every department of the show will be much improved and augmented. From all that we could learn there is every reason to believe that the exhibition will be, as on previous occasions,—a credit to the various branches of industry that create the wealth and constitute the stability of the country.

We were somewhat surprised to find the country for several miles around Kingston suffering from a severe drought, the ground not having been thoroughly wetted since the commencement of spring. Notwithstanding, the Kingston market appeared to be well supplied with vegetables of excellent quality, and at moderate prices. This lime stone soil, in a showery season especially, is admirably adapted to fruit, vegetables and grasses, which it produces in abundance and of the best quality. For many years we have been in the practice, when in Kingston, of going over the Vicar General's extensive garden, adjoining Regiopolis College, and have seen horticultural operations of the more ordinary and useful character carried on there with much success. This garden affords a pleasing illustration of the triumph of skill and labor over great natural difficulties; the lime stone rock cropping out to the surface having been quarried for the building of the college, and conse-

quently a new soil had to be formed. The drought this season has seriously affected the crops; the fruit trees, several of them at least, appear declining, and the garden having got, as we understand, in other hands, there is an absence of that attention and clean culture for which it used to be distinguished. By the bye, the Bishop's garden, of much smaller extent a little higher up, has recently been formed under similar disadvantages. It is quite a gem of its kind; the vegetables excellent and flowers beautiful. This stiff soil has been much ameliorated by deep and thorough tillage, and might be further improved by an admixture of decomposed black muck or bog earth, and well rotted sod mould. We are always pleased to see the clergy bringing their taste and influence to bear on the improved culture of the soil, whether it be on the farm or in the garden. Instances of this are to be seen everywhere in the British islands, and most European countries, attended by untold blessings. The church, that is the religious houses, even in the gloomiest periods of history, was not only the conservator of learning, but she kept alive the embers of agricultural knowledge and of territorial improvement. The monks were the best farmers and gardeners of the age. Happy would it be if every country minister of the present day had attached to his residence a beautiful garden and productive glebe; and while impressing on his people the higher truths of revelation, did not omit to teach both by precept and example those salutary and refining lessons which the cultivation of the soil, directed by a love and knowledge of nature, is so admirably calculated to impart.

The country on either side of the beautiful and extended bay of Quinte is varied and exceedingly picturesque in appearance, the soil resting on solid limestone rock, and generally productive. Amherst Island which separates the lower part of the bay from Lake Ontario, belongs to an Irish gentleman, who entrusts the management of this magnificent property, consisting of about 12,000 acres, to his brother, Mr. Percival, with whom we formed an acquaintance while crossing the Atlantic, some three years ago. The farms on the island are generally small, or at least of moderate extent, rents very low, and the people well to do. No winter wheat is now raised, nor root crops, except potatoes, to any extent. The timber is mostly hard wood, with no more of it than is sufficient for fuel and fencing. The land is well adapted in most places to pasturage, and several of the farmers have good grade cattle, and excellent Leicester sheep. Draining here, as in most other parts, must be the principal means of agricultural advancement.

We spent two or three days very pleasantly in the county of Prince Edward, the surface

being undulating, the scenery is often very varied and pretty. Formerly, winter wheat was extensively grown in this county, but for the last few years its culture has entirely ceased, owing chiefly to the action of insects and early spring frosts. Spring wheat appeared pretty good, though late, and we saw or heard but little of the depredations of the midge or fly. Peas were excellent, to which crop both climate and soil are well adapted, and there is generally an absence of the maggot, which is often so destructive of this grain in other places, particularly in more southern latitudes. The greater part of this county has more or less suffered from drought, and the hay crop consequently was in many places, a failure. As one travels west the amount of the rain fall increases, and the crops look better. The central parts of Prince Edward, we were informed, are particularly liable to drought in summer. Thunder rains either divide or incline to the direction of the lake or the bay, and the middle and higher portions of the country suffer thereby for want of sufficient moisture.

Hops are cultivated to a small extent in several places in the eastern section of this county. Of late the crop has been a paying one, but some half-dozen years since, prices were so reduced that the cultivation became very unprofitable, and the plantation was consequently reduced. We saw several gardens (or as they are termed here "yards" in the township of Hallowel, that appeared to be skilfully managed, kept clean, and the soil thoroughly pulverised during the period of growth by the horse hoe, or cultivator, in a style similar to what one observes in the Kent and Sussex plantations in England. The hops are planted in hills about seven feet apart, two poles of from 16 to 18 feet and upwards long, to a hill. To an old countryman the rapidity with which hops come into full bearing appears to border on the marvellous. As a general thing the plants from cuttings in England require at least two years and sometimes three before they arrive at their full vigor, but here a heavy crop is often raised the first year; that is to say hops planted in the spring will produce abundantly the fall but one afterwards. We observed many instances of the bine (or vine) reaching to top of 16 or 18 feet poles, having been planted only 14 months! Indeed we saw in one garden a pole 28 feet high covered to the top and throwing out a number of lateral branches! And, from enquiry, we found that there is but little risk in Canada of injuring the young stock from the use of too long poles, as undoubtedly exists in England. It is well known there that whole gardens have been permanently injured by what is termed "over poling" at the commencement. There is no doubt a limit even here which it

must be injurious to pass, and we think that we saw some gardens illustrating this fact in the before mentioned township; and we invite the attention of our hop growers to the subject, and should feel obliged for any information respecting it. One thing appears quite certain, that if hops come to earlier maturity in Canada than in England, they are much less durable; and this remark we believe, will also apply to fruit trees and other productions. Those who have had the longest experience in raising hops in this country inform us that the plant generally requires to be renewed every six or seven years: whereas in Europe it will continue productive for periods of a dozen or twenty years, and on some soils considerably longer. The white cedar which abounds in our Canadian swamps affords a durable and beautifully formed hop pole, and would be considered of inestimable value in the old country, but its exportation would not pay.

We heard from a person who has had a long experience in hop growing, both in Europe and Canada, that taking as a basis what may be termed a moderate crop here, viz., 10 or 12 cwt. per acre, the whole expenses of an acre would amount to about \$70 or \$80. This includes rent of land, manure, wear of poles, labour during the period of growth, picking, drying, and preparing for market. Now 12 cwt. at 15 cents per pound, would amount to \$180; leaving a profit of \$100 per acre! And this sum, or even a greater, is doubtless occasionally realised, but it would be exceedingly fallacious to assume that amount as the profits of hop growing in the long run. A diminution either in price or the weight of crop would of course affect the rate of profit in a similar proportion. In some years a blight would be experienced, in others a very much reduced price; which was the case a few years since, when some people abandoned the culture altogether. Whether the raising of Hops can be made permanently to pay will depend upon quite a number of conditions; such as suitability of soil, local climate, supply and demand, and last, but by no means least,—the skill and judgment of the cultivator himself. Without these personal qualifications, however favourable may be other conditions, we advise no farmer to become hop growers; a department of husbandry which requires experience and no ordinary amount of care, observation and perseverance. The curing is quite if not more difficult than the growing, and from inattention or lack of skill in the former very serious losses may, or rather will arise.—In cases where the principal conditions to which we have adverted are favourable, Hop growing no doubt will afford a much larger profit per acre than ordinary farm crops, and this has been the case for the last few years.

The consumption of beer in this country is on the increase, and its *quality* of late, particularly in the larger city breweries, has been greatly improved. Now and then we meet with Canadian ale that would not suffer in a comparison with the world renowned beverage of England; but it must be confessed that most of this article manufactured in Canada is yet of an inferior description. Improve the quality, and the consumption will increase, and the public taste will become more correct and healthy. The bearing which this subject has upon an important article of agricultural produce,—barley,—must be obvious to every one.

On reaching Brighton, in the county of Northumberland, where hops have been cultivated on a small scale for many years, we were informed that nearly 150 acres were planted last spring in that vicinity. If anything approaching this has taken place in other localities, there cannot be the shadow of a doubt that the supply will greatly exceed the demand in Canada. We are not likely to find a market for our surplus in the States, where they usually grow much more than they want for domestic consumption, and where too our hops would be subjected to a heavy import duty. England must be our market, as it is to a large extent that of the Americans; but it could only be when the British crop fell short that our export trade would be profitable. It is true that both excise and import duties on hops have been recently abolished in England, a circumstance favourable to importation to that country. We would urgently recommend our hop growers to pay the best attention to the growing and curing of this article, both for domestic and, particularly, foreign markets. The flavour of American hops is not well liked in England, and brewers have sometimes sustained serious losses in using them in the manufacture of pale ales for the eastern markets. The complaint is that they impart a flavour resembling that of black currant leaves. Of late, however, an improvement has been effected; clean picking and proper curing will no doubt improve the value of the article. It is a fact worth noticing by the political economist that while the British market is free to all the world, we in Canada, heavy as well as the United States, impose a import duty on this article coming from abroad, a circumstance which shows that free trade and reciprocity are not always identical.

Although the County of Prince Edward was among the first sections in Upper Canada that were settled, and has, perhaps, the largest amount of wealth in proportion to population of any in the Province, its taxation extremely light, and, as we understand, unblest by a public debt, its agriculture has made of late years comparatively slow progress. Much of the land has been over-crop-

ped, and weeds have got the ascendancy. Deeper tillage and draining would effect wonders, in a few years. Wherever these ameliorating means have been tried, the results have been invariably satisfactory. Rye and buckwheat occupy here too large an area in any system of improving husbandry. The breed of horses is good, excellent roadsters, but a little too light for deep cultivation, where the soil is heavy. It is somewhat remarkable that none of the improved breeds of cattle have ever taken a hold in this country. The cows in general are small, but they yield good milk, and considerable quantities of butter and cheese are made for the market. The introduction of a few good bulls of some of the improved breeds would be attended by the happiest results, and we were glad to see a young Ayrshire bull the Agricultural Society had purchased of Mr. Wright of Cobourg, a very promising animal, and also a Durham bull recently obtained from Mr. Wilcox Baldwin, of Oak Ridges, in the county of York. This is decidedly a step in the right direction. We must remind our Prince Edward friends, however, that next to a good breed is *good keeping*, and would urge on them a larger cultivation of root crops, which, with the exception of potatoes, hardly exist as field productions. We observed on the farm of Mr. Beadle, the president of the county Agricultural Society, a piece of mangrel wurzel of about two acres, which looked promising: but in going through the county we did not observe so much as half an acre of mangels, turnips, carrots, nor anything of the sort. Where the hay crop is so liable to be light, especially as it is in this district the present season, roots must be found a most valuable auxiliary. Indeed our best farmers in the west could not do without them. In a season of drought, turnips are no doubt difficult to raise, especially on stiff clay soil. But by deep and clean culture, judicious manuring and a determination to succeed, mangels, carrots, etc., may generally be depended on. We would not recommend beginners to commence root culture extensively, but to begin in rather a small way, and increase by degrees. One acre thoroughly managed, will yield as much as two or three indifferently treated.

Journeying westward, the country improved in appearance; the rains had evidently been more abundant, and the hay crop particularly, was better. We spent a day or two most agreeably in the vicinity of Cobourg, and profited much from observation and intercourse with intelligent and enterprising farmers, whose kindness and hospitality we shall long and gratefully remember. We took up our abode for two nights under the hospitable roof of the Hon. Henry Rutan, and were happy to find him again restored to

his usual state of good health, full of hope and animation, especially in his favorite pursuit of ventilation, in which by indomitable perseverance and energy of character, he has now the enviable pleasure of knowing that he has attained to a degree of success, acknowledged alike by scientific and practical men over no inconsiderable portion of this vast continent. Mr. Ruttan pointed out to us some draining that he was doing in an adjoining field, but he will pardon us for saying that he is not quite so familiar with the most approved systems of land drainage, as he unquestionably is in thoroughly ventilating and warming our houses, railway carriages, and public buildings generally. And here a thought occurs to us which we may be allowed to put on paper. Mr. Ruttan belongs to a class of men in Canada, which is rapidly passing away. Natives of a country which was then a wilderness, they had but few intellectual advantages, and in the pursuit of knowledge under difficulties, of which the present generation know nothing, they have by the force of character left indelible traces of their progress, and the benefits they have conferred on their age and country. Let us hope that in these days of schools and colleges, and all the modern appliances of improvement and civilization, our young men will learn to appreciate the services of these hardy pioneers, and emulate their example. There is a danger in the present increasing tendencies of the age to a soft and easy life, that we should forget or undervalue the important services rendered to posterity by the leading minds among the early settlers in what was then a vast and almost treadless wilderness.

We observed in the garden of Asa A. Burnham, Esq., President of the Provincial Association, a small plot of Bockhara clover, which was sown as late as the 2nd of June, the plants had come up tolerably even, and were growing vigorously. Mr. Burnham will report on the result as soon as obtained. Quite a number of experiments are in the course of progress by different farmers with foreign seeds from the late International Exhibition, of which we shall hear more by-and-by.

We spent a very agreeable day with Mr. Walter Riddell, who occupies a hired farm near to Cobourg, the soil is first-rate, well adapted to the general purposes of husbandry. Under Mr. Riddell's judicious management, he has succeeded in making his farming operations pay, without, judging from the appearance of the crops, impairing the productive power of the soil,—a condition not invariably found on rented farms in this country. We observed in a portion of a field some horse beans, a crop, Mr. Riddell informed us, he usually cultivated in a small way, but not with very marked success. It appears to us, from, it is true, rather limited observation, that our climate is not genial to the field bean; that is to such varieties as are so exten-

sively grown in the British Islands. Owing, we think, in great measure to the heat of this climate in summer, the blossoms of the field bean, (and it is often much the same with the scarlet runner) do not fructify, but drop off, and consequently prove unproductive. In some parts of Lower Canada and the eastern coasts, these kind of beans succeed better, influenced probably, as in the case of oats by a moister atmosphere. We have, however, an excellent substitute for beans in peas and Indian corn. We went through several fields of spring wheat belonging to Mr. Riddell, and the adjoining farm of Mrs. Wade, which promised a yield of 25 to 30 bushels an acre. The midge, however, we found at work, both here and in other places, and injury to some extent must have resulted. We were glad to find that Mrs. Wade has some of the pure Durham cattle, bred by her late husband, and could not but admire the productiveness of her extensive garden, and the beauty and tasteful arrangement of a large and varied collection of flowers. It is pleasing to observe in travelling over the country, the effects of the taste that is springing up for horticulture, a sure sign of increasing luxuries and refinement among the people.

Mr. Riddell drove us through the entire length of the county of Hamilton, to the shores of Rice lake on the north. The physical features of this district are considerably varied, and consequently so its soils and modes of farming. The low, rich, belt of land lying a few miles wide along the lake shore, is studded with good farms and comfortable homesteads, but it is remarkable that little, if any winter wheat is now cultivated within a few miles of the lake shore. So few trees have been left, and the country so opened to the influence of the sun and lake that the surface is denuded of snow in March and April, exposing the young wheat plants to the alternation of freezing by night and thawing by day, thus lifting them by degrees out of the ground. Five spring wheat is almost exclusively cultivated here, it is harder than the club, and when unaffected by insects yields liberally. We afterwards called on Mr. Hume, an intelligent and enterprising farmer on the higher ground to the north, where we came into the region of winter wheat, which was being gathered in, apparently a very fair crop. Here there is plenty of wood to shelter, and the snow lies longer on the ground than in the more thoroughly cleared region below. Mr. Hume's residence is considerably elevated and highly picturesque; we found him at his bush farm, a few miles north, busy in hauling peas and wheat. It is astonishing what a change labour will effect in a few years in these wilds. It is rough, but not altogether unpleasant work. The Backwoodsman, under Providence, is the creator of beauty and utility, and the consciousness of which is a perennial source of satisfaction and pleasure. In the frontier counties there can scarcely be said now to be any backwoods in the primitive sense

of the term, since settlements have been formed in all directions, and no extensive blocks of wild forest exist. In this part of the county of Northumberland new farms are yearly in the course of making and improving, the timber is not heavy, the surface rolling; and in a few years the landscape will present a scene of beauty and plenteousness. Mr. Hume is of opinion that planting wood must be ultimately resorted to on the old cleared lands for shelter and domestic use, when the culture of winter wheat may probably be resumed with former success. In this view we have found many to coincide. With respect to the attacks of the midge in spring wheat, Mr. Patrick Wright holds a strong opinion, which is sustained by Mr. John Wade, and others, that late sown Fife will almost invariably escape the ravages of that insect. We understand that it has been found in this section, in numerous instances, that wheat sown in the end of April or beginning of May, has been greatly injured or wholly destroyed; while that sown later has escaped. It will be important to collect a number of well authenticated facts in relation to this question, so as to admit of safe generalisation.

We regret having so little time with Messrs. Patrick Wright, Reddick, Alcorn, and others, whose farming operations would have afforded us much pleasure and information to have seen more in detail. Mr. Wright was the introducer a few years ago of the Alsike Clover, which is becoming more and more known and appreciated. He cultivates root crops pretty extensively, and is experimenting with different manures, the results when obtained, it is hoped will be made known. Mr. Roddick is well known for his excellent Durham and Galloway cattle. We saw some good Leicester sheep, a breed that is generally much liked in Canada, and in which there is much room, in many places, for improvement.

After spending an hour or two with Mr. John Wade, of Port Hope, who must be classed among our early agricultural improvers, and taking a momentary glance at his highly cultivated and well laid out farm, with some beautifully looking green hedges and ornamental shade trees, we took rail for Toronto, very much gratified with the journey.

A VARIETY OF GRASS.

EDITORS OF THE CANADIAN AGRICULTURIST: *Gentlemen*,—I enclose you a specimen of a kind of grass I have found growing on my farm. I do not know its name, or the order to which it belongs, nor have I ever seen it elsewhere. The stalks are about 4 feet in height, springing from a dense growth of leaves, the leaves themselves spring up from the roots of the stalks, altogether forming a

dense tuft of luxuriant vegetation. If this grass could be cultivated, and be made to cover the land as the specimen on my farm covers its $1\frac{1}{2}$ square foot, I think it would be next to impossible for weeds to obtain a footing among it. What I would like very much to know is—what would be its value as food for stock, and if its cultivation on land infested with the Canada thistle and other noxious weeds would have the effect of keeping in check or destroying them? I think, from what I have seen in this township, in Vaughan and York, that this year deserves to be noted as a year of weeds; the Canada thistles in particular, encouraged by the most reprehensible ignorance, indolence, and neglect of the proprietors of the soil, have shown their ugly forms to a most alarming extent, and they are in some instances I have recently seen in a fair way of making a wilderness of whole farms. I should like to be allowed the privilege of a few remarks on this subject in a future No. of the *Agriculturist*.

Yours obediently,

JAMES ELLIOTT.

King, Aug. 15th, 1863.

[The specimen of grass enclosed by our correspondent is the "Cocksfoot," or, as it is most commonly called in the States, "Orchard grass." This grass has been cultivated to some extent in the United States, though but little that we are aware of in Canada. It is a kind of grass that makes a strong rough coarse growth, too much so rather for hay, unless cut in an early stage. It makes an early growth in spring, and is therefore valuable for pasturage, and is much relished by all kinds of cattle, if cropped close to the ground, but if allowed to run up to coarse stalks cattle do not like it. It also produces an abundant aftermath. We are not aware that it would have any particular value in preventing the growth of weeds; in fact from its tendency to grow in strong, isolated tufts, it might have rather a contrary effect, unless sown along with several other varieties of grass and clover. The cocksfoot is considered one of the most valuable varieties of grass in England. The seed may be obtained at the seed stores in this city. It is very light, and is sown at the rate of one to two bushels per acre, mixed with other sorts. We shall be glad to hear from our correspondent again on the subject he proposes to write upon.—Eds.]

ON THE BREEDING OF HUNTERS AND HACKS.

BY HENRY CORBET.

(From the New Part of the Bath and West of England Society's Journal).—Concluded from page 299.

We must, then, insist on the conditions as advertised by this society for "a thorough-bred stallion to get hacks," as the main principle to go on. Such an animal, as I have already intimated, need by no manner or means have been a famous racehorse—a fact that of itself would go to place him beyond our limit, at the same time that it is anything but an indispensable item in the qualifications. The chief things we have here to look for are true symmetry, good action, a staying pedigree, and freedom from hereditary taint. A deep frame, a round barrel, on a short, wiry leg; a sensible rather than a "pretty" head, a well-laid shoulder, a good back, and plenty of bone. Never mind if his powerful quarters do droop a bit so that they run down to big clean hocks and thighs; and do not care to dwell too much over an accidental blemish, or even a fired fore-leg, so that the leg itself is of the right shape and calibre. Above all do not mistake mere beef for power, and in the thorough-bred horse, over all others, go for wire, muscle, and breeding, in preference to what may look like more substantial qualities. In this respect some of the authorities of the show-yard, who are called upon to decide over sheep, pigs, chaff cutters, and hunter stallions still require a little tutoring. In the "what to avoid" we must guard against soft, flashy strains of blood, that are of no value beyond the T. Y. C., and hereditary infirmities of all kinds. Bad eyes, bad wind, bad hocks, and suspicious ring-bone-looking fetlocks are all very bad things in a stallion, the more especially if you can trace them. A horse may be blind from accident or ill-treatment, and one of our most eminent veterinarians has assured me that he did not think there were half-a-dozen stallions in England that were not roasters. The injudicious manner, however, in which many stud-horses are still kept, what with high feeding, hot stabling, and little exercise, might account alike for diseases of the eye and the respiratory organs. Still, beyond what you may deduce from actual appearances, it is always as well to look back a little into the genealogy of the thorough-bred horse. Some lines, for instance, are notorious for the noise they make in the world. Humphrey Clinker, the sire of the famous Melbourne, was a bad roaster, as was Melbourne himself, and as are many of his sons and grandsons. Another celebrated Newmarket horse was known to get all his stock with a tendency to ring-bone, and weak hocks give way as soon as you try them. There are clearly admitted exceptions: a stone-blind stallion will get animals remarkable for good eyes, and a thick-winded horse may not reproduce this in his progeny; but, as a maxim, wind, eyes, and hocks should be the

three essentials of anything *sound* enough to bear in mind the sort of mares such a horse is to breed from, be it either sire or dam. I would not so much declare for a big horse as against fair sized one; and the saying of a good big horse being better than a good little one is not quite such a truism as it sounds to be. Fifteen two or fifteen three, with bone and substance, is big enough for anything; and when we come to bear in mind the sort of mares such a horse is to be put on, it is perhaps preferable to anything higher. For my own part, I go very much with the Cline theory, which says, "It has generally been supposed that the breed of animals is improved by the largest males. This opinion has done considerable mischief, and would have done more injury if it had not been counteracted by the desire of selecting animals of the best form and proportions, which are rarely to be met with in those of the largest size. Experience has proved that crossing has only succeeded in an eminent degree in those instances in which the females were larger in the usual proportion of females to males: and that it has generally failed where the males were disproportionately large. When the male is much larger than the female the offspring is generally of an imperfect form." It must be some such opinion as this which causes that rare sportsman, the venerable Sir Tatton Sykes, to breed from none but small or moderate-sized sires; and I believe that the cross of the Exmoor pony with the thoroughbred horse would be yet more successful were the latter only more proportionate to the size of the mares. It would be pleasant to hear that Lord Exeter had lent handsome little Midas to his old neighbour of former days for a season or two, when we might expect to see in the produce some of the most perfect hacks ever backed. Not the hideous, vulgar, heavy-shouldered, loaded neck, Prince Regent kind of cob, but a little pattern of beauty and strength, with style, substance, and action really fit to carry a king. Such a hack as this would soon outplace even the Prickwillows and Phenomena, already going out of use for the saddle, now that men travel to meet hounds in first-class carriages, and the feats of Dick Turpin and "The Squire" are fast becoming mere matters of hearsay. Like the modern hunter, the modern hack must be well bred, and the council have done right to couple the two in the requirements of their stud-horse. If a country breeder wishes to ascertain for himself the description of the riding horse that is likely to make the most money. I would recommend him to stroll into Rotten-Row, between one and two, during the approaching season, where he will find here again how "blood will tell," and what Mr. Rice and Mr. Quartermaine have to go in search of.

Will the man who means to do better and give nag-breeding a fair trial be good enough to bear in mind that much of all I have said as to the sire applies equally to the dam? Let there be some shape and make, with health and

action, and the same warranty as to wind, eyes, and hocks. With rarely any pedigree to fall back upon, appearance and soundness must be the chief recommendation of the farmer's mare: and even such a verdict based upon such conclusions must not be too hastily arrived at. Many a comparatively mean looking-one has before now thrown the best of stock, as that peerage of their order, the *Stud Book*, would assure us: mares that need carefully looking into before they are condemned or passed over. To give an illustration, however, direct to our purpose: about the grandest cock-tails I ever saw were Mr. Foster's Combat, Challenger, and Nike, all capital runners at welter-weights, and all the children or grand-children of, I am assured, as common-looking an animal as could be. The old mare had, no doubt, much within her "that passeth show," brought out as this was by the cross to the thoroughbred horse. In fact, if the dam be but clear of hereditary unsoundness, and with good action, I do not think we should be too scrupulous in asking the tenant to send nothing but the great, fine, slashing mares which they would, as half-bred, be scarcely justified in buying up. A friend in Devonshire has sent me a few lines on the way in which the "packhorse" answered to the superior cross, that I must give here as especially in place in a west of England journal:—

"The true pack-horse is extinct, and has been ever since my horse-recollection, that is, for about the last twenty years. The animals then going, in 1840, called 'pack,' were out of pack-mares, but their sires had crosses of blood of Yorkshire. Old Gainsborough, the thoroughbred of household notoriety in Devonshire, one who flourished somewhere about 1830, is generally credited with *never having got a bad one*. I attribute this to being the first cross with the true old pack-mares; and I believe that any moderately good thoroughbred would have produced a similar result, could he have had a chance with the same sort of mares. The animals resulting from Gainsborough and these pack mares—and I have several in my mind's eye—were perfection in make, shape, and action, weigh-carriers, everlasting, perhaps scarcely speed enough for the present fashion of spurring across the grass counties, although safe to shine through a severe thing and be at the finish. This Gainsborough generation of riding horses has also gone, and *no young Gainsborough cocktail stallion ever got a good horse*. It is a public misfortune that the line of the old pack-horse has not been continued in a pure stock, both for his own excellent inherent qualities, and for the value of the first cross with the thoroughbred. The big half-bred mares of this cross put again to a good sound, thoroughbred sire produced the animals to go the pace and carry the weight brilliantly in any country, and this is my pet process for a breeding line."

Of late years the west country farmers appear to have been crossing and re-crossing out of all

rhyme and reason, until they have nothing left but the horse of all-work, which, as amusingly demonstrated at Truro, they hardly knew how to class, either as a riding-horse or as a common draught-horse. However, as my friend adds, "Every Devon farmer, as a rule, breeds or tries to breed riding stock, and as a consequence, in some hole-and-corner holdings a stylish, promising nag colt is often dropped upon where a stranger would think it about as likely to find an elephant."

So much for a fitting foundation. But let the thoroughbred stallion, under the countenance of the Hunt, be ever so well adapted for his purpose, and the mare really worthy of his caresses, the business of breeding is yet only in the beginning. Better-bred stock require better treatment, and pay better for it. Half a horse's goodness, as it is said, goes in at his mouth; and it will be idle for farmers to attempt rearing riding horses without they do them a deal better than, as a rule, they hitherto have done. A half-starved foal never forgets it; and from the day he is dropped he must be the object of some care and attention. Does the dam give a good supply of milk? Does the young thing look as if he was doing well? Let his feet be looked to, as he grows on; and, above all, let him be well kept, have a fair supply of corn, comfortable sheltered quarters, and so forth. I am no advocate for ever-coddling, nor would I wish to see the hunting colt brought on as if his mission was to win the Derby; but liberal rations, kindly treatment, and gentle handling will all tell by the time he is first led into the show-ring, or delivered over to the breaker. I confess to have some dread of that same country breaker, with all his wonderful paraphernalia and apparently indispensable habit of hanging about public-houses, as a means for making young horses handy. No man needs more watching; and as I have just intimated, a vast deal may be done towards making the young one temperate before ever he reaches this trying stage in his career.

The horse is by nature a social animal, and especially after weaning, two or three of the foals will do better in company, due care being taken that any one of them does not become too much of "the master pig," and get all the good things for himself—to correct which they should be separated at feeding time. When together, they will challenge each other to "strike out" a bit, whereas the solitary mopes about with but little incentive to try his paces, and is much like a boy brought up at his mother's apron-string, or a young fox-hound that has lost his friends. I should hope by this that a duly-qualified veterinary surgeon is within hail of most farmers, and I would leave it to this gentleman to throw his eye occasionally over the little stud, arrange the proper period for castration, and other such detail that will necessarily have to be adapted to time and place. On any such minutiae of the matter it is not within my purpose here to enter,

even if it would be profitable to do so. This paper rather professes to deal with the great principles of breeding riding-horses, and in seeing these carried out with a little more heart and judgment than they generally have been.

One word more for the veterinarian. Nothing can be more wholesome than the regulation which, after considerable discussion and division, the council of the Agricultural Society are still able to insist upon of part of their proceedings—viz., that every horse entered for exhibition shall be examined and passed by a duly appointed veterinary surgeon previous to his facing the judges. It is true that the latter should and might be able to reject an unsound animal without such assistance; but their edict would not carry the same weight, especially with the disappointed owner of a disqualified horse, as the professional opinion of the college-man. It is scarcely fair, in fact, to place gentlemen who gave their services to the society in so invidious a position—one that often renders them liable to much gratuitous abuse. I would not, however, have the veterinary inspection of the meeting in any way interfere or intrude upon the judges when at work. His duty is to see that none but sound horses go before them, and there to limit his responsibility. Sometimes it will happen that the judge will associate the two offices in his own proper person; but, as a rule, it is better that the society should appoint its own veterinary surgeon; and I would recommend that this course be adopted on the inauguration of the thoroughbred premium of Exeter. Of course such an examination should not be confined to the stallions, but extended to every class of horses in the entry. It is somewhat significant to reflect how resolutely this plan has been resisted in certain quarters, and by certain exhibitors, not merely at the meetings of the Royal Agricultural Society. I know at this moment of a country show of some repute where the presence of a veterinary inspector has been for years successfully tabooed, until the number of unsound animals exhibited has just come to create some alarm for the character of the breed. I am speaking here rather of cart-horses than riding stock: while I am glad to see that a leading member of the direction has put himself to reform this too flattering fashion of making up a show and that a preliminary veterinary examination will henceforth be embodied in the rules and regulations.

It is very clear that within the last few years the proper stimulus has been given for breeding a better description of "nag-horse," and I am sanguine of still-continued improvement in this way. I have seen most of the famous horse shows, and had the pleasure of being present at that grand meeting at Middlesborough, where the first hundred ever offered was won by Lord Zetland's celebrated Voltigeur; from the great success of which occasion the national association, but two years since, was induced to insti-

tute a similar premium. The Bath and West of England Society is now promptly following in the same course, and with every prospect of this very agreeable feature in the business of the farm being more systematically developed, with proportionate advantage to the breeder and credit to the country.

Agricultural Intelligence.

THE ROYAL AGRICULTURAL SOCIETY'S SHOW AT WORCESTER.

The twenty-fifth annual Exhibition of the Royal Agricultural Society of England took place in the immediate vicinity of the ancient and picturesque city of Worcester, July 18th, and, with the trials of implements, occupied the entire week; and upon the whole it is said to have been a remarkable success, though the Society, it is understood, will be some hundreds of pounds out of pocket. With the exception of Leeds, (leaving Battersea, which was international, out of the question) the Society has never before drawn so much money for admission as it did at Worcester. The total amount received up to Friday evening was £6,810. The admission to each person on the Monday, when the Judges were making their examinations, was ten shillings, amounting to upwards of £400. Tuesday and Wednesday the admission was 2s. 6d., amounting together to a little more than £2,000; while the shilling admissions on Thursday and Friday reached the munificent sum of £3,715. The four implement trial days yielded only £67. For the last two years Members (subscription £1 a year) have been admitted free; formerly they paid the same as non-members; their only privilege being their receiving the Society's Journal gratis.

As this important national society has just completed a quarter of a century, the following table, compiled from statistics furnished to *Bell's Weekly Magazine*, will be consulted with interest by many of our readers, affording data by which to measure the progress of the Society; and it is pleasing to remark that a career not less instructive and prosperous has characterised the history of our Provincial Association of Upper Canada.

Date.	Place.	Paid for Ad'n.	Implement Exhibitors.	Cattle Ex'd.
1839,	Oxford,	£	....	350.
1840,	Cambridge,	....	....	451.
1841,	Liverpool,	....	....	463.
1842,	Bristol,	....	84	497.
1843,	Derby,	....	113	608.
1844,	Southampton,	2432	90	716.
1845,	Shrewsbury,	1682	98	527.
1846,	Newcastle,	2168	110	775.
1847,	Northampton,	2473	142	580.
1848,	York,	2514	146	866.
1849,	Norwich,	2360	145	799.
1850,	Exeter,	2493	118	769.
1851,	Windsor,	3397	....	1226.
1852,	Lewes,	1184	105	828.
1853,	Gloucester,	2734	128	931.
1854,	Lincoln,	3378	130	931.
1855,	Carlisle,	3200	121	1076.
1856,	Chelmsford,	2988	151	906.
1857,	Salisbury,	3447	166	1462.
1858,	Chester,	6187	197	1444.
1859,	Warwick,	5459	246	1601.
1860,	Canterbury,	2689	204	981.
1861,	Leeds,	9855	358	1027.
1862,	Battersea,	9540	342	2000.

The Society had no Implement Show this year, which was merged in the London International Exhibition.

The trial of steam ploughs and cultivators commenced on Wednesday; the competitors were Messrs. Fowler, Coleman, Smith, Howard, Stevens, Savoy, and Hayes. Savoy used one of Fowler's ploughs, with his small set of digging tackle. The work is described as all that could be desired. Stevens tried his plough and cultivator, but without success. On Thursday, Fowler, Savoy, Smith, Howard, and Coleman started to use their cultivators in a lea-field. Here Coleman's implements gave way at starting, and worked no more that day. After the others had finished cultivating, Fowler, Howard, and Savoy started their ploughs. Fowler's work was unexceptionable. Smith used his compound drill and cultivator, but the ground was not in a suitable state for its proper working. The judges then requested Mr. Fowler to use the digger, which made good work. This ended the trials for the best apparatus for small occupations. On Friday morning the race started for the gold medal and £50 prize for the best application of steam power to the soil in a field of clover. Fowler, Howard, Smith, Savoy, and Coleman, were directed to use their cultivators. Smith and Fowler here made very good work, also Coleman; but one of his grubbers again broke,

and he withdrew from the contest. Fowler next made some capital work with his digger, using two engines. The ground chosen was a very tenacious clay of a nature to test fully the efficiency of implements for steam cultivation. Fowler, Smith, and Howard were set to work in a field of stiff cold clay that had been in pasture for eight years. It had been predicted by many that none of the implements would work in it, which, fortunately was not so, although Howard and Smith did only light work. Fowler's digger worked to the astonishment of the spectators. Most decidedly better work could not be done. The soil was moved about 8 inches deep, and left in pieces lying in all forms, many pieces striking up from one to two feet above the original surface. The chief novelties amongst the different sets of steam tackle were Messrs. Fowler and Savory's, each working two engines with one implement, a plan likely to come into use in some districts, and for letting out for hire. Other results from these trials will probably hereafter come to hand which, if of sufficient importance, we shall not fail to lay before our readers.

We subjoin an abridgement of a very elaborate report in the *Mark Lane Express* on the Live Stock department:

The meeting opened well, as rarely have the preliminary proceedings commanded more attention; and this, too, in the face of the assertion that, whether the premiums for stock be persevered with or not, it was high time that such a system of rewards for implements were abandoned. Our special reports will tell how the trials of the steam cultivators were watched, and the performance of the steam engines analyzed, not only by the judges, but the public. It is, indeed, doubtful which of the awards that we were enabled to give on Monday last would create the most sensation in the country. For our own part, we believe that the highest honours for steam-ploughing would be more talked over than the best shorthorn bull or first thoroughbred horse; and a national congress of agriculturists, without any such wholesome stimulus to turn to in its programme, would have been but the awkward movement of a body with a limb lopped off. Not, however, that the taste for good beef and mutton is by any means dying out; and many a stranger, as he entered the wide and well-mapped show-ground, anxiously asked his way to "the beasts"; hurrying through, with just a passing glance, the handsome avenues of machinery, and curtly declining the many offers to take a list, or look at a

plough, until he had satisfied himself as to who was first for Leicester, or best man amongst the Cotswolds? And here, if we did allow our friend picking the plums out of his pudding at once, we might send him amongst the sheep, the strong feature, taking all kinds and classes, of the whole Show. The foundation, moreover, was good, as seldom have the recognised breeds, either Leicester or Southdown, been better represented; while the Cotswolds made again a grand stand, and the Oxfordshire Downs proved yet more worthy to some rank of their own. Either for numbers, or individual illustrations of their order, we must repeat that the sheep classes were the best section of the Show; and such entries as Colonel Inge's pen of Leicester ewes, Lord Walsingham's Southdown shearling, and Mr. Robert Garne's Cotswold rams, may have been previously equalled, but they have certainly never been surpassed as perfect specimens of their several sorts. In distinguishing these entries the judges by no means kept to any previous precedent, and it reads somewhat untoward, that in his last season, and just previous to his final sale, Mr. Sandy should have been so signally defeated as he was at Worcester. Still, it is consoling to feel that the Holme Pierrepont ranked only as second in one of the best general exhibitions of Leicesters ever got together; and Mr. Sands was but beaten with his own tools, as Colonel Inge has long continued to breed from these Nottinghamshire sheep, while his very shepherd comes from the same fold. Both the classes of rams were of a very high character, with very few indifferent entries amongst them, as the many commendations of our prize list will testify. The Thorpe Constantine shearling, of good size and admirable quality, is very perfect, and it would be difficult to pick a hole in him; while the five ewes from the same flock are the best pen of Leicesters ever seen together. Of remarkable uniformity, with sweet thorough-bred heads, great width, fine size, and a capital touch, they ran clean away from the rest of the class; as Mr. Sandy's seconds were not up to his usual standard, being only a middling lot, very delicate in appearance, and lacking something in size and growth. Mr. Borton, who has been in the habit of using rams for Sledmere and Holme Pierrepont, won everything with the old sheep; but his third prize ram was bred by Mr. Sanday, and is still further noticeable as the sheep over whose place at Battersea some rather angry discussion ensued, but where by the way he occupied amongst the shearlings precisely the same position he now claims amongst the all-aged rams. Mr. Borton exhibited only three in this class, and the first and second prize sheep were both bred at home. The best of the three, which was the best shearling at York last year, is a ram of great style, with good substance, active and cheerful in his character, and with a famous touch. The strength of the Leicesters may be in some instances estimated by the

fact that so well known a breeder as Mr. Geo. Turner sent several sheep, not one of which received any special notice from the judges.

Amongst the Southdowns there was some similar upsetting of great reputations. The Hove flock, for instance, was declared to have gone back, the rams having coarse heads and bad shoulders, with a certain delicacy about them that Downs are too apt to run into; so that, with the eight sheep shown, Mr. Rigden reached no higher than one commendation. If, however, one man had gone down, another had come on; and the extraordinary improvement in Lord Walsingham's flock was the sensation of the meeting. His Lordship would appear to have at last brought the Southdown sheep to something like a standard of excellence, uniting style and quality with good size; and with, as the index to his advancement, his first prize very generally pronounced to be the best shearling of the breed ever exhibited. But this one was by no means suffered to stand alone, as the other half-dozen shearlings from Merton were almost equally commendable for the three great points of pedigree, mutton and wool; on any of which considerations proportionate progress was observable, with five out of the seven individually complimented by the judges. Since the dispersion of the Babraham flock the late Mr. Webb's man has accepted service at Merton; and, as a consequence, the very common remark was that, "It's all the shepherd's doing." Fortunately for those who believe there is still some art and judgment necessary for breeding as well as for feeding or trimming, there was some other proof in the Worcester Show-yard that it was *not* quite all the shepherd. Thus, the first prize aged ram, now upwards of four years old, is the father of the first prize shearling, of the second prize two-year old sheep, and of three of the ewes in the first prize pen. He is, again, the father of the Yarmouth and Hamburg first prize sheep; and, above all, was bred by Lord Walsingham at Merton. Still, the career of this famous ram has been somewhat chequered: as a shearling he was first at the Norfolk Show; and as a two-year first again at home, and third at the Royal meeting at Leeds. As a three-year-old he was only highly commended at Battersea; though at Dereham, a week or two afterwards, we thus wrote of him: At Battersea in the old class the Merton rams were second, third, and commended to Mr. Rigden's sheep; whereas at Dereham the second and third were precisely in their former places and the Royal commended sheep *first*! Mr. Woods all through maintained that this is the right reading of their several merits, and general opinion was again with him against another bench of Battersea martyrs.¹⁷ This was written a year since, but it is all equally applicable now that the father of the flock has further asserted his superiority, though he leaves them in his old age, having been sold previous to his Worcester triumph triumph to go to Wurtemberg. There

was no cavil whatever as to the Norfolk Downs having it all their own way, and Mr. Rigden took his beating like a man; the only discussion whatever being over the third and fourth pens of ewes. Lord Walsingham's first were here again about the best out for many a day; capitably matched, with plenty of mutton of fine quality, and wool of undeniable texture; while Messrs Heasman's next best had beautiful heads and necks, with famous legs of mutton at the other end of them, their chief drawback being that they were rather over or badly trimmed. Three of Lord Radnor's five were really admirable ewes for almost any point, size, mutton, or wool; but a want of thorough uniformity in the whole pen stood in their way, and the third prize went to some rather small and delicate sheep of Mr. Farquharson's, but still far away the best that the old Dorsetshire Squire has ever yet set his seal to. The three classes of Southdowns, with such exhibitors as we have referred to, or that the commendations make special mention of, were altogether of a very high order of merit, though disfigured by the presence of a few sheep that had no pretensions to any place in a Royal show-yard.

Still, despite the stand they are still able to make, there is little question but that the old-established firms, like the Leicesters and Southdowns, are gradually losing some of their business, which is going over to such opposition houses as the Cotswolds, Oxfords, Lincolns, and other Long-wools or half-breds. Of these the Cotswolds and Oxford Downs supplied two wonderfully good lots of sheep, the former quite up to their previous repute, and the latter coming to the fore very fast. Never, in fact, was the grant of a class more fairly earned or better supported. The Oxfords, indeed, have a deal of good about them, either in the way of mutton or wool; and in the best flocks, moreover, there is an increasing uniformity of style that speaks to the care with which they are now cultivated. So far, in fact, as Worcester was concerned, the show of the sort was highly encouraging in every respect but one, and that was the shameful way in which many of the sheep were exhibited, the abuse being heightened by some of the worst cases winning the best prizes. It was good to see Mr. Bryan placed first with I fairly clipped clever shearing, though he was only a second at the recent Oxford Meeting; whereas Mr. Wallis' old rams looked as if they had not lost a lock of wool since the day they were lambed. The Duke of Marlborough's ewes, again, may be fine animals; but the judges must be wonderfully "up" in feeling for make and shape if they could exactly say what they were through the mass of wool in which they were smothered. Of course, conscientious men like Mr. Charles Howard and a few others have but little chance, while the Society permits of its representatives in the ring aiding and abetting such monstrous evils as these—practices that tell alike against the conduct of the

Meeting and the character of the sheep. Breeders of other varieties turn away with a smile of contempt from these hapless Oxfordshire Downs, sweltering in a July sun under a two or three years' fleece. They must be bad-framed animals, indeed when their bad points require such elaborate concealment; or, at least, that is the palpable argument which the world will draw from the heavy overcoats so much in fashion with too many of these Oxford mixtures. There were upwards of fifty shearling Cotswold rams entered, and mostly of that grand imposing appearance, for which of late years they have been so celebrated on the show ground. There are certainly, few sheep that tell more when put upon parade, the besetting sin here being still to overmark many of them in the way of condition, or otherwise the Worcester example was very commendable for general excellence, there being perhaps no other so even a lot in the whole catalogue. From some cause or other the Lincolns make no great impression on the show-ground as compared with their accredited worth in the market, and there were no classes at Worcester that attracted less interest than this company of Other Long-wools. Three very good classes of Hampshires and other short-wools owed much of their excellence to the presence of a new exhibitor at the Society's meetings—Mr. Rawlence, who opposed even Mr. Humphrey with quite his share of success. In fact, the three pens of ewes from Bulbridge were the finest lot of West Country Downs ever brought out, and the first five very admirable for nice stile, coupled with good useful qualities.

Firm as has been our faith in the Shropshires, they have not made that general advance of late which we had expected, and there is not much progress to report at Worcester. Either there is no reliable type, or the judges go by very different roads to get at it. Here they went all for magpie faces and speckled legs, and more for mere size than symmetry. Mr. Stubbs' first prize shearling, although with some good blood in his veins, is a very uneven sheep, standing badly before, and nothing extraordinary from behind. He began public life early, however, and was a prize-trimmed lamb at the Staffordshire Meeting last year. He will now, probably, go on hire to Lord Shrewsbury, while one of Mrs. Baker's very sorry lot crosses the Channel for Ireland.

There was, of course, more direct argument for the strong show of Hereford cattle, indisputably the most evenly excellent entry of any breed on the ground; although in mere numbers these did not exceed the Battersea complement of something under a hundred in all. True in their frames, wealthy to handle, and handsome in appearance, the first class of old bulls at once betrayed the "weakness" of the white faces: from sires to sons, or cows to calves, there were but too many over-fed; and one or two as we hear and hope, really set aside as too

fat for any becoming example of what a breeding animal should be. Both the first and second prize old bulls were alike equal to this objection; but Plato carried his beef more equally distributed, and had altogether a more active, lively look than Sir Oliver, very palpably over-marked, and as short of hair as if it had been singed. He has, otherwise, many of the points of a grand bull; but, for a combination of quality, symmetry, and usefulness, we are still of opinion that the first and second should have been the other way; and the judges themselves were quite open to discussing the question. Lord Bateman's bull is short and thick, but with something very attractive about him, and Raglan was worthy more notice than he received. The next division was a class of, as good animals as are often seen together, with Mr. Taylor's Tambarine quite the best bull in the Hereford classes, combining those great requisites of the present day, size, quality, and substance. Moderator, the second best, has good length, but somehow with hardly enough of grandeur about him for a prize bull; and more attention ought to be paid to style than to a mere lump of flesh. There were such a lot of famous cows, that for size and quality have rarely been matched; indeed the first prize one of Mr. Wm. Perry, of Cholestrey, with a calf a few days old by her side, was just what one would like to see more of; and the second also a very good one; while Mr. Duckham's eight-year-old cow would do credit to any herd, as it is rarely we see a Hereford attain that age without getting very patchy. Perhaps, with the years upon her, this was almost the best cow in the class, and she might have been placed higher in the list. A commended cow of Mr. Turner's did not appear to have done much towards increasing her owner's stock of cattle, but nearly all the cows shown were as a class good, and must be considered a credit to the breed. The in-calf heifers are usually the best class of the sort, but here they were not so well up to the mark. Mr. William Tudge's nice thick heifer has a rare lot of hair, but is not a very good one to meet, nor are her head and horn quite right. The second is not of a good colour, being lighter than is now quite the fashion; and Major-General Hood's highly-commended heifer, with rare thighs, back, and rump, was still not fine enough forward; while two heifers shown by Mr. Thomas and Mr. Williams were thoroughly spoiled from over-feeding.

With nearly double the number of entries, as compared with the Herefords, and reaching in all to somewhere about a hundred and eighty head of cattle, the Shorthorns were by no means so even a sample of their sort. On the contrary they were a very ragged lot, with a number of drafts in almost every class, and scarcely one grand animal amongst them. It was not, in fact, until we had travelled on to Mr. Eastwood's white yearling bull, The Hero, and had coupled him with our old acquaintance of many

a meeting, Lady Pigot's Pride of Southwicke, that we came to anything like really "Royal Firsts." Still, the best old bull, Mr. Wilson's Duke of Tyne is a well known winner in the north—at Hartlepool as a calf, at the Durham County, and at Belford; while he is by Cœur de Lion, a bull that Colonel Townley sent up for the use of his north-country tenantry. Then, Mr. Wilson himself was not only one of the Judges of steam-ploughing at Worcester, but the acting Secretary to the local committee that a month or two back secured a second visit from the Society for Newcastle-upon-Tyne; so that even beyond his personal appearance the prize bull has many contingencies in his history. There is no question, either, despite one of the judges declaring against him, that he was the best of his class on Monday; and when seen out is a very telling animal. With great size, a deal of character, and of good quality he is wonderfully fine forward, and would be a very imposing animal to meet, but for his long plain effeminate head, which must always be a strong point against him. General Murat was also second at the York show last year, where we spoke of him as showing more use than style, a point in which he is still terribly deficient. In fact, instead of preferring him to the Duke of Tyne, the general opinion was that Mr. Brawn's lengthy and handsome young Radford should have had second place. Amongst the commended Mr. Clayden received no notice for his elder Marquis of Cornwallis, while Lord Feversham's blood-looking bull showed a deal of his sire's high quality and temper. If this all aged class did not evince any extraordinary form, the younger bulls were yet more moderate; and the winner, Hemlock, plain and narrow, with a coarse coat; and bad either to meet or to follow, was continually objected to; Mr. Peel beating him for symmetry, style, and promise. The third prize introduced us to another of the Butterflies, but one with just the family character—light, airy, and all breed and fashion. In the next division we pause before the shorthorn bull of the show a yearling with hardly anything but his colour (white) to be offered against him; level and long, with capital hind quarters, good ribs, and a famous touch, The Hero should go on, for he is by no means over-marked as yet; and his place thoroughly due to a happy combination of such essentials as symmetry, growth, and quality. He is as yet a very young one as compared to many others in the class, and at all points but sheer forcing a very superior animal to the gold medal white of Battersea-fields.—Still, another Butterfly, light, leggy, and stylish, was declared to be a close second; while a more clumsy one, of something the same kith and kin, with the dreadfully clumsy title of "French Butterfly's Cœur-de-Lion," was an indifferent third. What a name for a herdsman to handle, or even an editor to book! In the large class of Calves Sir Anthony de Rothschild tasted first blood with a very clever one—fine

in his coat famous in his quarters, good in his bosom, and remarkable for his quality; but Mr. Garne's second, light, narrow, and common, was less liked; and Pretor, with plenty of Bates' character, showed the family failing of forward shoulders. Only five cows were entered, and we thus wrote of the first and second on meeting them at Exeter a month or so since: "The Pride of Southwicke, who never looked better, promises well for Worcester, where she may even improve on her previous place at the Royal; but the Maid of Athens has got a little gaudy behind—always her worst point, and we do not expect to see her again with anything like her pre-eminence at Wells and Battersea."

It was in truth only the weakness of the class that let Mr. Lane's cow in for second at Worcester; Lord Spencer's with some fine points about her, having gone all to pieces; and being no longer fit for "the flags." Both the prize heifers, also the deep, sweet-headed Rosedale, and the neat, well-finished Queen of the May, look more like qualifying for Islington than breeding-purposes; while Colonel Towneley's couple of beautiful Butterflies would promise to be of more service in the herd, and hence may be, their secondary honours in public. The Duke of Montrose's yearling, or just upon two-year-old heifer, is again all forcemeat, and certainly an extraordinary example of what may be done in the way of high-feeding; though encased as she is in fat, still said to be seven months gone in calf.—As with the Herefords, the extra premiums for pairs and family parties were not successful, and the Queen of the Ocean and Soldier's Bride, as full of good fat beef as a butcher's shop in Christmas week, furnished something very like a burlesque on what the Society does in the way of milking cows. These were pushed off into the Other Breeds, where Mr. Bloxsidge, with a hand and heart for the good firm flesh of a Hereford, would look at nothing beyond a Loughorn, a Runt, or the Norfolk and Suffolk polled—the latter in some force—and on the strength of being good milkers carrying all before them. The exhibitors, however, of the Channel Island Cattle are anything but satisfied, maintaining that they have purity of breed to begin with, and that butter and milk-producing animals are entitled to some distinct recognition from the Society. They say, further, that it is mere folly to show a milking cow against a fattening beast, especially with judges who know of, or prize nothing but beef. On these grounds a deputation had an interview during the week with Mr. Hall Dare, when they suggested, or, rather, directly solicited, for separate classes for the Alderneys and Jerseys, backing their prayer with the fact that more of these cattle, even under present disadvantages, were sent than of the Sussex beasts, where, in a special class, twelve premiums were handsomely offered for just about as many entries. The general show of the Islanders, however, was not so strong as Battersea, and the Guernsey's were altogether

indifferent; but Mr. Gallais' Jerseys were far better, and his third-prize heifer a very pretty specimen of her breed; while Mr. Dumbrell's prize bull, another good one, found a purchaser early in the week in Lord Binning. The weak place in the Prize List is no question this lack of any encouragement for the *best* milk and butter; and though the Society does travel north next year, we trust that the prayer of the petitioners will be entertained, and a Channel Island class established. It would be sure to be popular especially with the general run of visitors.

The show of Devons was to a great extent but an echo of that at Exeter, so that it would seem such leading men as the Davys, Quartleys, and Halses have this year really nothing to send. Mr. Newberry's Prince Jerome, as we wrote of him at first sight, is "a deep square blood-like animal, with fine flesh and a beautiful bull's head and bright eye"; and the famous Viscount "in better form than at Wells, has still never thoroughly recovered from his early forcing; and though a great wide bull, has grown out of shape, with a loose, bad quality when you get your hand upon him." These two come into direct competition at Worcester, with Prince Jerome still first and Viscount second. There were only four bulls in this class, and only two in the next, where Mr. Surman was first, with a lengthy, true-made animal of high character, from the herd of Mr. George Turner, who was himself a winner with the thoroughbred Drone (though his commended Trumpeter was of better quality) as well with the pretty little Devonians, and a heifer calf. The Royal herd, however, was very strong amongst the younger stock, and Prince Alfred and the Rose of Denmark proved worthy of their titles. The former is a very promising, straight, lengthy bull, and the heifer very blood-like in her appearance. The old cows, a generally commended class, as it also was at Exeter, included many of the same animals; Young Hebe first in the West, and Golden Drop—two cows which, with the winner Rachel, were got out of so prematurely by Lord Portman; while old Cheerful, "a grand cow still," has been second at both these leading meetings of the year. From amongst the heifers, Mr. Hambro's Lina, "very handsome and useful," was still first and first, with Mr. Perkins' Alice third and third, but Mayflower now put aside for Mr. Farthing's Jenny. Of the younger things, Mr. Butler's, the best female at Exeter, was, of course, still the best at Worcester; and, in fact, as we have said already, the one show is far too close a reflex of the other. Nothing but General Hood's nominations gave the visitor who had seen the one any inducement to follow out the other; and if we were not quite satisfied with the stand the Devons made in the West, we were the more disappointed with all they could achieve at the great national gathering of the year, and that not so very far from home either. Fifty entries in all, for one of the three established breeds, does not com

pare well with a hundred Herefords or nearly two hundred Shorthorns. The editor of the Devon Herd Book must look up his champions.

The horse ring at Worcester was decidedly the centre of attraction, in spite of the straight-backed bulls, cloathed cows, improved pigs, or sheep with the whitest of wool, clipped in the "last new style" by the most fashionable and scientific of shearers; of steam ploughs, traction engines, thrashing or washing machines, and the most complicated of rat traps. After all that has been said and sung about the deterioration of the breed of horses, one thing at least was very apparent from the expressions that continually broke forth from not only the men, but the lasses in the crowd after crowd that encircled the ring, viz:—that, if the horse be deteriorated in breed, the Englishman's love for him is in no way diminished, and that we are as proud of him as ever. The roped ring and comfortable boxes, although on a smaller scale, continually reminded one of Battersea, Mr. Tom Pain still being "The Genius," and keeping admirable order in the quietest and pleasantest manner. For the Royal hundred a dozen stud horses entered the arena, all considered by their owners as best calculated to improve and perpetuate the sound and the stout thorough-bred, and which was duly confirmed by the judges highly commending the lot:—Rouble, by Cossack, a neat level, hunting-looking bay, with smallish thighs and hocks; Ancient Briton, a chesnut, very wiry, muscular and lengthy, with shoulder well laid back, rare quarters, short back, long thighs, and hocks near the ground; still he was rather leggy and had not the most agreeable countenance, but is nevertheless a very useful horse; Plum Pudding, a dappled bay, well christened, being a heap of flesh and as round as a dumpling; Malek, a weak-necked, stilty, and flat-sided animal; Cavendish, a rich dark brown, with fine frame, and very muscular—short-legged, and all over a really stout, hardy-looking animal, with fair action, if perhaps a little short in the thigh; Neville, a vulgar-looking horse, with a coarse heavy neck, and low harness withers, bad forelegs, weak arms, elbows in, and pasterns that all but let the fetlock joints on the ground as he threw his legs about; as if he wished to get rid of them—a style of going that ought to have shafted him long ere this into some Lord Tom Noddy's cabriolet. There is nothing like good action; but we do not think that false, flashing, flourishing action ought to be encouraged in the show-yard, because through some ever-varying whim of fashion it now happens to command a price. And we would seriously remind our judges that there are far more graver things to be thought of than the mere capricious tastes of Picadilly dandies, when awarding a prize to a thorough-bred horse for general stud purposes. Let our authorities endeavour to set the fashion, not to follow, by going in for the useful as well as ornamental—for a horse that bends the knee, strikes out from the shoulder, with elbow free,

setting his foot down firm, and at the same time getting over the ground; and not by upholding your flashy Nevilles, throwing their legs about like ballet-dancers— or the pony Tom Sayers, hammering away in the same place like a blacksmith at an anvil. A greater medley never appeared in a ring, consisting of gig-horses, carriage horses, trotting-cobs, cloathes-horses, if we may judge them by their wooden looks, and one great lumbering brown, suitable for a carrier's cart. Amongst the better was Sir Peter Laurie, just nineteen years old, and just the very sort of horse we want to get rid of—the modern steeple chaser, a nag with a neck like a giraffe, as leggy as a foal fresh dropped, with a very light middle-piece, and that gone in the back; yet this was the horse that took the first prize, and that thousands were to carry away in their mind's eye as a model to get hunters! Whitmore, a chesnut four-years old, with a little more bone would have been the sort of horse, though only fifteen-two or three; but two years may yet do something for him. Elliott, a short-legged horse, with a stain in his pedigree, of a strong frame, and showing a deal of character, but short in the quarter, and a gingery mover, with a large-capped hock, took the second honours; and Safeguard, a twelve year-old chesnut, up to as many stone, with the true hunter stamp, but lacking the blood of Whitmore, was the third. The Prince of Wales was lengthy and light; and Solferino long, low, and deep-ribbed, and a good marcher was, barring a heavy neck, not an unlikely horse. Solferino, Whitmore, and the Prince of Wales were ordered out of the ring almost before they had completed the circle; whilst Romley, who had a damaged leg, through getting across an awkwardly-placed bar in his box, had the honour of being kept in to the last, making his owner fancy, for a time, the prize was actually going into the land of Bucks! The premium for brood mares for breeding hunters was awarded to Lalarge, a thorough-bred one, with a capital shoulder—a great point in any riding horse, especially a hunter, but a recommendation which, in this class and the others, was rather scarce. Then came the "mares or geldings exceeding four years old, equal to fifteen stone with hounds," which was decidedly the best represented class of the meeting by a very long way, and containing many really fine framed horses. There were in all six-and-twenty, and as they came one after the other into the ring, Worcestershire gave vent to a prolonged note of admiration, "What a fine lot of horses!" But fifteen stone with hounds is a great weight; two stone less would have been more agreeable to many of them. The first prize horse, Mr. Booth's "Beechwood" is up to the weight, with a good shoulder, but greatly disfigured by being fed like a bullock, and having rubbed the hair from his dock. The second best was a nice-looking bay mare, Elastic, with not the best of shoulders nor the shortest of cannon bones.

So far the show of horses was encouraging, and in some classes, such as weight-carrying hunters, remarkably good. With, again, Cavendish first, and Neville anywhere else they choose to put him, the third offer of the thoroughbred hundred would have quite reached its aim; and many of the young riding-horses were commendable. In fact, this section of the show is manifestly improving; whereas, if we are to take Worcester as the test, the agricultural horses are as palpably retrograding, for it is many years since so small or so poor a lot of draught-horses have been brought together under the auspices of the Royal Society. Try them by almost any class of breed you would, and they were alike wanting in numbers and merit. Possibly the Hamburg Meeting operated in some degree against the Worcester, and travellers do assure us that the Brewer and the Clyde horses exhibited on the continent would have been a decided acquisition to our show of last week. The best of the open class, Black Prince, is a heavy, useful animal of great power, and active for his size, but still with no extraordinary merit about him; while the Clydesdale, placed second, is a far truer made horse, and deservedly in general favour with the public; so much so that the judges must surely have had some peculiar reasons of their own for not ranking him higher. The choice of all the draught-horses, however, was Young John Bull, the dray horse, and a very fine illustration of the sort required; of good size, great power, active and handsome, and a long way before the others of his class in all the essential points of appearance and character; although, perhaps, it was hardly fair to try Mr. Neale's smartish three-year-old by the side of the aged and thoroughly-furnished animal. The selected brace of two-year-old dray-horses won against little competition; the other class of two-year-old fillies resulting in no entry, and the mares and foals in but a single nomination, of no apparent merit in either mother or child, and scarcely worthy on any consideration of a Royal first. But it was in the special class of the Suffolks that the falling-off in the cart-horse classes was more particularly observable, only one aged stallion being sent to compete for two premiums, and one mare and foal to keep him in countenance in the companion class. Of these Duke could never have the ghost of a chance at one of his own native shows; but Sir Edward Kerrison's Bragg is of a far higher stamp, being a grand mare all over; a royal winner before now, and the second of her class at the Ipswich meeting a few weeks since. Mr. Ward's fine filly was again first, and May-bird had also a place at home, as well as here, though at the best but a light one to look on. Over the two year-old colts Mr. Barthropp must have been clearly outvoted, as handsome Young Emperor has now to give way to Mr. Mumford's more useful colt, the award the other day showing a preference for fashion—a point in which Young Duke is

singularly deficient. A variety of reasons were offered for the short show of chesnuts, in such woful comparison with the imposing entry of last year at Battersea, prominent amongst which was the want of railway accommodation; the authorities only agreeing to take stock free one way, on the homeward journey, and even then the horses would have to travel in cattle trucks, or the full fare be charged to and fro. It is, though, very clear that the Suffolks must come again in more force, or the class will necessarily drop through. There was some complaint of the cart-horses being calf-kneed; but Professor Varnell, who performed his duties with an ability and good taste, upon which we can honestly compliment him, reports very favourably on the heavy classes, as indeed he does of the horse show, in regard to the important matter of soundness. In the open class of cart-horses there was only one roarer; neither were flat-feet nor other defects very numerous. Of the dray stallions there was again but one roarer, but more tendency to flat brittle fore feet; while the Suffolks were remarkably exempt from all diseases, their feet being very good, and the chief failing of the chesnuts a tendency to smallness below the knee. The Professor's report is, in fact, an address of congratulation on the absence of hereditary diseases amongst all other classes of horses, especially the sires, be they race-horses, hunters, ponies, or cart-horses; a gratifying result which he very fairly attributes to the preliminary examination now insisted upon, and that one or two very active members of the Council have done every thing in their power to abolish ever since so wholesome a system was first instituted. It is said, indeed, that one man still threatens an annual motion on the subject!

Professor Simonds was enabled to report as favourably of the freedom of the cattle from disease, as his brother professor of the horses; but amongst the pigs there were many qualifications, attributable, however, rather to the trickery of the exhibitors than to any actual ills in the animals themselves. These were entered under, or even over their proper age, just as it suited, and ingenious were the devices adopted to make up a prize pen of sow and pigs. The Yorkshiremen were the chief offenders, but one well-known breeder from the Eastern Counties was also found, to use the mild phrase of the inspector, to be extremely "careless" about the due record of weeks and months, and he suffered accordingly. The show on the whole, was a fair one, though by no means generally good, the great feature of the different divisions being the Berkshires, which came again in immense force, and furnished the best entry of this breed ever yet brought together. The sow class was generally commended; whilst, beyond the capital pigs of Messrs. Hewer, Sadler, Hitchman, and others, these classes were materially strengthened by Mr. Joyce, of Waterford, whose Berkshires we have so often had to commend in our

notice of the Irish shows. He had six young boars of the same litter, that for uniform excellence have seldom been surpassed, and one of which took a prize, three more being highly commended, and the two others commended. The small white pigs were also very evenly good; and the judges had a deal of difficulty in placing the boars of this division, the companion-lot of sows being equally creditable to their class. The small blacks, on the contrary, made nothing like the sensation they did at Battersea; and the supplementary compliments amongst them did not extend beyond a couple of commendations. The large boars were indifferent, and the competition limited; but the large sows, though few in number, were a capital lot, and Mr. Wainman's Fresh Hope, bred by Messrs. May of Beamsley, an extraordinary animal for size, symmetry, and quality combined. The pens of three of almost any breed rarely ranked above mediocrity, and we did not meet with any of those wonderful match lots, or trio of Graces, that one comes occasionally across when Mr. Mangles is just in the vein. With Birmingham so handy, and Bingley Hall so famous in this way, the Worcester Pig show might have been better.

THE INTERNATIONAL AGRICULTURAL MEETING AT HAMBURGH.

Abridged from the Mark Lane Express.

The Battersea International Show has already had its effect upon the Continent; and the German States have been the first to move. A guarantee fund of £10,000, by fifty-seven persons, first gave the key-note, and the project was set going in October last. The Executive Committee comprised six merchants, three farmers, and one dealer, with the famous Baron Merck as President; Mr. Olde, the dealer, and Messrs. Bieber and Ross, farmers, having also been very active. The show-yard covers 1½ million square feet. The total cost of holding the Exhibition will not be less than £20,000. All the German States, Austria, France, Sweden, America, Denmark, Switzerland, Holland and Belgium are represented by Commissioners: these work by executive committees. The lamented death of Baron Merck cast a sad gloom over the proceedings; but General-Consul Schanseeback undertook the office of President. These committees have been ably assisted by the General Agricultural Society of Germany; and Baron Nathasius, their President, who was one of the first to secure English animals for the Continent, is well known on this side the water.

Hamburg, at once selected as the site for the meeting, is built on a square English mile of ground, with a population of 200,000 inhabitants. The whole of the Hamburg territory does not amount to more than 33 square miles; but it has to keep 72 English miles of river in

a navigable order, surrounded by foreign states, that try to strangle them through toll-bars: and in spite of this they have been able to work themselves up, without marine or military forces or diplomacy. The suburbs and the immediate neighbourhood, round the banks of the Alster, are garnished with the finest villas and gardens, which you may count by hundreds, and scarcely see two houses alike. Englishmen who visit this place use the expression, "This is a paradise." The Alster, an artificial lake, raised eleven feet higher than the Elbe, has a good supply of fresh water from a large extent of country lying to the north-east. It empties itself into the Elbe at the back of the famous English Hotel, from the "summer-house" of which you see the falls of the water.

The show-yard was within an easy distance of the city. On entering, you could not fail to be impressed with the importance of the gathering. A tastefully-arranged lake, with a fountain in the centre adorned with flowers, &c., backed by an ornamental pavilion for the band, first caught the eye; while in the distance stood the working offices and refreshment rooms, supported around by the exhibition classes and implements. The varied costumes, the many tongues, the several characteristics of the many breeds of stock, coupled with the weather and the novelty of an international gathering in the German States, had its effect upon the visitors. These were numerous and distinguished; but it was singular to remark the absence of the English aristocracy, the leading breeders and, we may even write, nearly everybody else except the officials. The Royal Agricultural Society was represented almost alone by Sir W. Watkin Wynn—the breeders by Mr. Crisp, of Butley Abbey; Mr. Sexton, of Suffolk; and Mr. Woods, as Lord Walsingham's agent. Nevertheless, England was tolerably well represented by her animals.

Proceeding now from the course to the show-ground, we may begin by saying that as it is difficult to follow the classification as arranged by the committee of management, we must make our remarks as general as possible. *Imprimis*, the English exhibitors of sheep ran great risk of being without a representative or a judge, for no person was appointed to act in this department. It was, however, preliminary arranged that Mr. Robert Smith, of Emmett's Grange, should officiate, both for the English cattle and sheep. The Merinos stand first in the catalogue, and are classified as rams and ewes with fine wool, and rams and ewes of coarser or different descriptions of wool. It must be understood that in each class of sheep animals of all ages are exhibited, and not as at the English exhibitions, where there are classes for rams of one year old, and others for rams of any age. The entries were as follows—

- 165 Merino rams of fine wool.
 103 Pens of 3 ewes do.
 324 { 193 Rams of coarser wool.
 37 Do. do. in another class.
 94 Do. do. do.
 323 Pens of 3 ewes do. do.
 50 Southdown rams bred in England and Scotland.
 120 Pens of 3 Southdown ewes bred in England and Scotland.
 32 Southdown rams bred on the continent.
 21 Pens of Southdown ewes do do.
 14 Shropshire or other short-woolled rams.
 12 Pens of ewes do. do.
 20 Leicester rams bred in Great Britain or Ireland.
 46 Pens of 3 Leicester ewes bred in Great Britain or Ireland.
 6 Leicester rams bred on the continent.
 21 Pens of 3 Leicester ewes do.
 100 Cotswold or Lincoln rams bred in Great Britain or Ireland.
 177 Pens of 3 Cotswold or Lincoln ewes bred in Great Britain or Ireland.
 10 Long-woolled rams bred on the continent.
 35 Pens of 3 do. ewes do. do.

The exhibition of Merino sheep is undoubtedly the largest ever held, and of this breed there are many excellent specimens. We can almost think we observe an increase of size and an increasing weight of wool: whether this is done by a more careful selection of the animals bred from, or by a distant dash of some other breed, we are unable to say; but we certainly do observe not only this increase in size, in many of the animals, but that unerring test, the hand, tells us of more mutton and of better quality than we generally used to find. We hold that it is a matter for serious consideration with our foreign friends whether they will confine themselves to the production of wool alone, or endeavour to produce a more profitable carcase at the same time. If this be done, we think that the Englishman's laugh at a foreign chop or leg of mutton will pass into oblivion. That the international exhibitions are calculated to remove much prejudice admits of no doubt; as for instance Lord Walsingham's best Southdown ram was sold for 100 guineas to Baron Maginas, of Saxony, and the second prize sheep was immediately afterwards sold at a high price to Baron O. Hedengren for the Swedish Government. Other sales followed in quick succession, and when we left the yard only three of Lord Walsingham's sheep remained unsold. We gathered the following figures:

First prize yearling Southdown ram	100	gs.
Second do. do.	50	gs.
Second do. (at Yarmouth)	60	gs.
No. 18 - - -	40	gs.
Shearling - - -	46½	gs.
Little sheep - - -	35	gs.
Nine shearling ewes - - -	180	gs.

The unsold sheep were above an average, for one of which 80 guineas was refused. The Merton flock received all the prizes. The Yarmouth first prize shearling again stood A 1, but the second at Yarmouth had to succumb to the third. The ewes fairly staggered the German flock-masters, showing that good and fine wool could be produced on large carcasses. Good specimens of the Babraham flock were exhibited.

Many of the sheep were exhibited in their wool, which at once created an unfair test as to qualities against the shorn ones, and in one instance the judges had considerable difficulty as to naming their reserve number. Several of the sheep exhibited, especially those in the wool, suffered immensely from the heat and fatigue of their journey. Lord Walsingham lost a capital ram worth 70 guineas, Mr. Crisp another ram, and Mr. Taylor his best yearling ram, before being judged—a pure Webb, and brother to the ewes. The Duke of Richmond's ewes, as also others of Messrs. Crisp and Sexton, sold well. Of the Southdowns bred on the Continent, we may mention those exhibited by G. Zoeppritz, Wurtemberg, Baron Nathusius, Baron Magnus, of Drehsa. These were the most successful flocks, and carried away the prizes. They are descended from the Babraham sheep, and were real fair specimens of what may be done; but there was a falling off in others—in fact, some exhibitors had no previous opportunity of knowing what an English Southdown ought to be. This type, however, has been strongly impressed upon them at last by means of the International Meeting, where they have had the true Southdown placed before them, and from which a future trade must spring.

Award of Prizes.

Southdown Rams.—First and second, Lord Walsingham, Merton Hall, Norfolk.

Southdown Ewes.—First and second, Lord Walsingham; third or reserved, Mr. Taylor, Harptree Court, Somerset.

Southdown Rams bred on the Continent.—First G. Zoeppritz, Wurtemberg, bred from Messrs. Webb and Foljam's flocks; second, Baron von Nathusius, Prussia, bred from the Babraham flock; third or reserved, G. Zoeppritz, Wurtemberg.

Southdown Ewes bred on the Continent.—First G. Zoeppritz, Wurtemberg; second, Baron von Nathusius.

The Classes open to all other Shortwoolled Breeds from Great Britain were pretty well contested. First, for rams, was awarded to Mr. Guerrier, London, for his Oxford Down, of capital form and quality; the second went to a very fair specimen of West Country Down, bred by Mr. Humphrey, Oak Ash, Berks. Mr. Druce of Eynsham also exhibited some good specimens in this class; but as they possessed heavy fleeces, upon large frames, the

five foreign judges completely upset Mr. Smith, and would "go in" for animals that possessed more of the Down qualities.

For Shortwoolled Ewes not being Southdowns, there were only three entries, but these were sufficient to represent their qualities. Mr. Humphrey's West Country Downs were first; Mr. Merton's Hampshires second; and Baron von Laffert, Mecklenburg-Schwerin, highly commended.

The Leicesters from England and Scotland were pretty good. Mr. Groves, Kirk Hammerton Lodge, Yorkshire, received the first prize, and honourable mention as third, for two good animals; the second went to Mr. Smith, Hull, for a ram bred by Mr. Fisher, Beverley. Lord Kinnaird, Scotland, had also some useful sheep in this class.

Leicester Ewes from Great Britain (7 pens).—Lord Kinnaird, Rossie Priory, Perth, distanced all competitors; they were descended from the old Burley-on-the-Hill flock, and quickly placed by Mr. Smith as A 1: these were fine specimens, and had kept their quality and form well up to the good old age of five and six-shear ewes; the second went to Mr. Smith, Hull. Mr. Grove's ewes from Yorkshire were highly commended.

Leicesters bred on the Continent.—These were but moderate sheep, and by no means recognized by us as approaching the English Leicester; but the money was distributed.

Lincoln Sheep bred in England.—Here we had a tolerable muster from the flocks of Messrs. Marshall, of Branston, Lincoln; Kirkham, as exhibited by B. Henneberg, Holstein; J. Clark, of Long Sutton; and Merton's, of London by purchase "on speck." Amongst these were some splendid specimens of the Lincoln long-woolled breed from Mr. Marshall's flock, who would have had all the prizes but for the marked aversion of the foreign judges to heavy fleeces of wool. However, the English judge insisted upon his shearing receiving first honours, and found a second prize sheep amongst Mr. J. Clarke's. Mr. Marshall's two shear was then placed as third best, and his ram hoggs, truly enveloped in fleeces of lustre wool weighing at least 20 lbs. each, were highly commended, and honourable mention made of their respective fleeces. Mr. Marshall also exhibited five fleeces in Department A., for articles of produce. These fleeces were minutely inspected and weighed by the authorities, who recorded them thus: three Lincoln hogg fleeces, very fine, weight 17½ lbs. each; two fleeces from two-year-old sheep, very heavy and good, weighing 19 lbs. each. The length of the staple upon the ram hoggs shown in the classes was 18 inches, in broad flakes of a bright rich yellow lustre caste.

Cotswolds bred in England.—This breed was well represented by Mr. Sexton, from Suffolk, Mr. Handy and Mr. R. Garn, Gloucestershire,

as also by Messrs. H. Gebhard, London, Mr. E. Merton, London, Mr. Gibson, Scotland, who sent specimens for two purposes—to compete and for sale. Mr. Handy sent a magnificent old sheep, which at once was placed first; but we much doubt the wisdom of sending so fat an animal "over the sea." Mr. Robert Garne had two capital sheep in the yard—these were placed second and third. There was a good trade doing in Cotswolds.

Cotswold Ewes bred in England.—There were some fair specimens from Scotland. The first prize went to Mr. J. Gibson, Woolmer, Edinburgh—these were bred from the flocks of Messrs. Handy and Lane. Mr. Merton's young ewes received the second.

Long-woolled Sheep of a Continental race.—These specimens were from the marsh lands of Holstein, and a few from Hanover. The Holstein race is of a large caste standing immensely high, and known for their unrivalled produce in numbers at a birth. As an instance, we give a quotation from the catalogue, as exhibited by N. Dohrn, Damonfleth, Wiltermarsch, Holstein:

1 mit (ewe)	5 lammern (lambs)	weiss (horn)	3rd Jahr.
1 ditto	4 ditto	ditto	ditto
3 ditto	3 ditto	ditto	ditto

Thus, we saw eighteen lambs produced, and sucking their five lambs—surely this is worthy the notice of the Acclimatization Society! M. Dohrn purchased two Cotswold rams for crossing this race, with a view to a more meat producing element, and they really seemed in need of it—fancy five lambs to rear up! In the other classes for foreign sheep (not Merinos) we noticed pretty well every form, colour, and class of wool that could be thought of—some had horns. There were amongst them many well-intentioned breeds that might be most profitably improved by an infusion of English blood; but this would require great care, so as to maintain the family characteristic of the Continental breed. To enumerate the prize list would be uninteresting to English taste. There were some interesting *crosse bred* classes, resulting in a profitable return. In one instance the Cotswold ram and a Merino Ewe had produced a prodigious animal with fair wool and feeding qualities. A cross between the Southdown and Merino also produced a capital animal, as did the cross between the Leicester and Merino. These were kindly furnished by Baron Nathusius as specimens of the crosses. There are severally designated: Cotswold-merino, and Leicester-Merino. There is also a very good looking sheep termed Dishley-merino; and another named Lincoln-velmoe. These results tend to extend the international element and market for English rams—in fact they were much sought after; so much so that in some instances you would see quite a crowd round the English pens, and many of the crosses.

Average live weight of the three shearing

ewes, as shown in the different classes, weighed for record on the suggestion of Mr. R. Smith:—

	lbs. each.
Lord Walsingham's Prize Southdowns	167
G. Zoeppritz " "	
bred on the Continent.....	155
Mr. Humphrey's West Country Downs	169
" Smith's, Hull, Leicesters.....	164
" Marshall's Lincoln's.....	260
" Gibson's Cotswolds.....	192
M. Dohrn's Holstein ewe (with 5 lambs)	200
" " 5 lambs.....	84

The above is the new Hamburg weight, 100 lbs. of which is equal to 107 lbs. English.

These live weight returns convey *solid* information which may be readily turned into dead weights. Multiply by 5 and divide by 8, and you have a basis to work upon, which practice will quickly regulate according to the quality of the animal. Thus, a sheep weighing 200lbs. alive, will weigh 125lbs., nett, when dead. This experiment at once exposed the "unfair shorn" sheep, and placed the solid ones in their right position *Scales vs. Tape*.

Cattle.

Shorthorns bred in Great Britain and Ireland.

Amongst the bulls were some first-class specimens, such as First Fruits, Gamester, and Lord Lovell. These certainly left a mark upon the foreign mind, and were constantly surrounded by anxious enquirers—but, to their respective attendants, in an "unknown tongue." We need hardly name that First Fruits and Gamester were each first in their classes, and Lord Lovell second to Gamester. Lord Kinnaird's bull Honeydew—famous for his former laurels in the North—had great merit; indeed, he is a massive and well formed animal, with fair quality. A bull by Royal Butterfly 3rd was second to First Fruits. Amongst the females Mr. Crisp was again foremost, with his first prize cow, second prize heifer, and a commendation. Mr. J. Groves, Kirk Hammerton, exhibited a white heifer of fine proportions, and received the first prize. Amongst the shorthorns bred on the Continent, were two prize bulls and a heifer descended from the Towneley herd. The Ayrshires was by no means good. There were some good types of the Galloway breed, which sold readily, and at high figures. These were chiefly from Forfarshire. Mr. Stewart's heifers from Aberdeen were very choice; but the leading animal was Mr. D. Smith of Leyshade's Ole Bull—a good one. French Charolaise (shorthorn) were not remarkable; in fact, they were scarcely represented. To enumerate all the Continental breeds of cattle, as here classified, would be tedious, and by no means profitable. They were much of the same order as those exhibited at Battersea but not so choice. Some of them had been

crossed with English bulls; these stood out as remarkable specimens, in the midst of their leaner brethren. The most remarkable cross was with a shorthorn cow and a Zebu bull; another cross, pretty similar, was that with a Zebu cow and an Ayrshire bull. Next came the classes for working oxen, the most remarkable feature of the foreign section. They were shown in their harness, which was very picturesque, and they were of immense size, and in many respects represent a cross from the English breeds, especially the Sussex and Devon. This formed a pretty feature of the show.

What may be designated as "the business" part of the meeting, viz, the sale department went off well. In addition to a clearance of all the English Southdown and Cotswold sheep, some few Lincoln and Leicester lots of pigs, and all the Galloway cattle, Lord Walsingham sold his second-prize bull Lord Lovell, and Mr. Crisp was just closing for Gamester. First Fruits was purchased by a company in the neighbourhood of Tonning, to be used by subscription. Several hundred Downs and other ewes were sold by salesmen and dealers. One party invested £2,000 in stock for sale at the show. Four Scott's bred by Mr. T. Lyell, fetched 500 guineas.

The pigs were numerous, and in many respects good. Messrs. Crisp and Sexton did well for Suffolk, in carrying away a "lot of prizes," while they sold their animals at high and remunerating prices. There was a great trade carried on amongst the "swine."

Horses,

The strength of the horse department will be apparent when it is stated that there were no fewer than 513 entries, the greater part of which were present. These were divided into 36 classes, viz, thorough-breds, Arabs, and half-breds, bred on the continent; half-breds bred in Great Britain and Ireland; Suffolks, and other horses for agricultural purposes, bred in Great Britain; agricultural horses bred on the continent; different classes for mares and geldings, for riding, &c., from one to five years old; ponies of different sizes, &c. &c.; indeed, far too numerous to mention in these hurried notes.

The entry for thoroughbred stallions included the well known names of Hobbie Noble, Mainstone, Willie Wright, Vortex, Harlestone (by Cotherstone), Kingfisher, &c. &c. Of these "Vortex" took the first prize of 400 thalers, "Harlestone" obtaining second honours and 100 thalers; whilst Hobbie Noble's bent forelegs prevented him from gaining more than a commendation. Next came the class of Arab stallions, containing several very clever animals, the winner, who comes from Mecklenburg, being 29 years old, and one of the most perfect specimens of his race. He gets a prize of 200 thalers. The second Arab was ridden by Lord Raglan in the

Crimea, and looks very different now to the wretched state he was in when he arrived at Mr. Mayor's yard after that campaign.

The first prize of 200 thalers in the class for half-bred riding-horses, bred in Great Britain, was taken by "St. Giles," a trotting horse from Yorkshire, but now the property of Mr. C. Olde, of Hamburg. Mr. Holmes, of Beverley, gets the 2nd prize of 100 thalers for "North Star." The first prize of 100 thalers for the best brood mare for riding purposes is gained by the almost invincible "The Yore," who will not, however, again appear in an English show-yard, Mr. Crisp having been induced, for a *consideration*, to part with her to the Grand Duke of Mecklenburgh. Much as we like to hear of distinguished foreigners buying our live-stock, we can but regret the loss to our country of so perfect an animal. Forty-four stallions bred on the Continent are shown for riding purposes, many of them being thoroughbred and good looking. Forty brood mares for riding purposes are shown, several of them being exhibited, but not for prizes, by the Kings of Hanover and Wertemburg, whilst an equal number in the two classes of three and four-year-old and one and two-year-old fillies are shown; although many of these animals are well bred and good looking, they nevertheless lack the substance we like to see in a class for "riding and hunting purposes." In the class for carriage horses bred in England, Mr. C. Olde takes first and second prizes for stallions; Mr. Groves, and Mr. Smith, of Marton Lodge, Yorkshire, respectively taking the first prize, 100 thalers, and second, 50 thalers: for their brood mares, and Mr. Holmes gets the first prize, 100 thalers, for his four-year-old daughter of Wild Hero. There were large entries of this class bred on the Continent.

We come now to the horses for agricultural purposes. The first class in this section were Suffolks; and it is rather to be wondered at that the honour of representing that breed would have been left almost entirely to Mr. Crisp; but that he was fully equal to the task will be seen from the fact that he took nearly every prize, not only in the Suffolk class, but in the other classes in which it was eligible for a Suffolk to compete. The first prize, 100 thalers, was awarded to Mr. Wilson's three-year-old colt that took the third prize at Ipswich the other day, Mr. Crisp taking the second, 50 thalers, also for a three-year-old. Stallions of other English and Scotch breeders: Mr. Groves (Yorkshire) gets the first prize, 100 thalers, with a very fine horse, "The Brewer;" and a clever three-year-old Clydesdale from the Royal Windsor farm gets the second prize, 50 thalers. "Dusty Miller," from Dumfriesshire, is highly commended, and Mr. Forbes's four-year-old is commended. Mares of the above class; The first (100 thalers) and the second (50 thalers) prizes are taken by two

good specimens of the Clydesdale breed from the Royal Windsor farm. The first, second, and third prizes (of 80, 40, and 30 thalers each), for the best pair of agricultural mares, were all taken by Mr. Crisp, for some useful mares, all three-year-olds. It was, in fact, a "walk over," as there is but one other entry, and that consisting of a pair of light carriage mares. There were several very active French horses and mares, the best being shown by Baron Nathusius, of the Percheron breed. Some good stallions and mares bred on the continent for agricultural purposes, but looking more fit for carriage-work, were shown; also some young geldings and fillies, but these latter classes were thought by the judges much too light for the purposes for which they were entered, and they withheld the prizes, several of them looking more fit for hunting or light harness work. There were some clever ponies, the prizes being taken by foreigners, with the exception of a second prize of 15 thalers gained by Mr. Crisp for a five-year-old mare pony, with foal at foot. The arrangements in the horse department were very good, excellent boxes being provided, with canvas blinds to enclose them entirely at night. There was a horse-ring in which the horses paraded every day, and it was a novel sight to see six or seven pair of carriage horses driven in breaks, &c., round the circle. Of these a handsome pair of dark brown geldings, belonging to Mr. C. Olde, obtained the first prize of 300 thalers; and Mr. Holmes (Beverley) the second prize of 200 thalers. Too much cannot be said in praise of the pains taken by the officials to have the meeting pass off well, and if only one or two of the classes had been more clearly defined we should not have had it in our power to say a word against the arrangements.

While our continental friends are happily exulting in their success, they have yet something to learn. On entering the yard we found the sheep exhibited from Great Britain almost studiously mixed up with the same breeds produced on the Continent; sheep in and out of their wool competing together, and the judges at work with the printed catalogue in their hands! The awards over, and the prize cards up, no one became the wiser, for they were placed at the highest part of the shedding, under the loose canvas which covered the sheds, and printed in small type. What would they have said in England? but this being in Germany, it mattered not to the English, who had not yet read up their German. At the lower end of the yard was the implement department, where we found the well-known stands of Shuttleworth and Co., the Howards, Ransomes, Barretts, Burgess and Key, Smith and Ashby, Barrett and Exall, Turner, Bentall, &c. There were 5 entries for steam ploughs, which were tried a short distance from the city. Trade was said to be brisk especially in the locomotive department. We saw nothing on the ground that we had not seen before, and therefore reserved

ourselves for the Worcester Royal. The mishaps amongst the steam ploughs, however, were numerous. One missed the boat at Hull; another received a severe "shaking" on the journey; a third toppled over when at work on four-acre lands, and a fourth may probably pull through, and receive the reward of merit!

Summary of entries from Great Britain and Ireland; Horses, 67; cattle, 132; sheep, 400; pigs, 89; implements, 73; produce department, 4—total, 737. Total of entries from all countries: Horses, 524; cattle, 965; sheep, 1,766; pigs, 293—total, 3,548. Implements, 2,941; poultry, 328; produce, 786.—Grand total of all, 7,603.

PLOUGHING AND PLOUGH JUDGES.

The following remarks from an editorial in a recent number of the *Irish Farmer's Gazette* contain much that is highly important and suggestive, and that is as applicable to farmers on this side the Atlantic as on the other. The mechanical methods of cultivating the soil have for several years been undergoing a slow but certain change; and from the recent introduction and improvements of steam ploughs and cultivators the rate of progress will undoubtedly be greatly accelerated. On this continent, we particularly need all the appliances which modern mechanical science can render in effecting a cheaper and more thorough working of the soil.—Eds. C. A.]

We have repeatedly advocated the extension of tillage in this country, by which we mean that system of mixed farming which gives us not only summer food for our stock, but also ample supplies to carry them over winter, and fatten them for the butcher during a part of the year when the latter cannot be done, if we are to depend, as many depend entirely on pastures. The propriety of such a system of management is self-evident, and we feel convinced that its general adoption is merely a question of time.

It must be borne in mind that there are very different kinds of tillage. We have, for example, the rude and imperfect cultivation of the soil which is to be found in so many cases among the poorer class of farmers, where the surface is little more than stirred year after year, and cropped in such a manner that in a short time its productive powers become so enfeebled that the land cannot yield much more than the seed sown, and it is then left to be recruited through the action of natural agencies. Then we have, as a contrast, the beautiful workmanship of the skilled ploughman, with his highly finished modern plough and his powerful team; and, as a still greater contrast, the "smashing" action of the steam cultivator—that great step, for it is as yet but a step, towards the perfection of an art upon which the prosperity of the nation so much depends.

There have been greater changes effected in the form of the plough, and the material of which it is constructed, than perhaps, in any other farm implement. There is wide difference between the highly finished and almost self-working implement of modern Royal shows and the rough-pointed stick with which primitive tillers of the soil stirred the ground an implement little better in its capabilities than the pig's snout, which Jethro Tull considered the first model of the plough. And even in modern ploughs there has been much done to alter the form, effecting the substitution of a light and really elegant implement for the cumbrous ploughs used by our fathers.

A question, however has arisen, whether in this refinement which the plough has undergone the work it is intended to perform has not, in reality, been in a great measure lost sight of, that work being "the most expeditious and effectual comminution of the soil, and its conversion into a seed-bed." The investigation of this point has been very ably handled by "An Old Norfolk Farmer" in the last number of the *Journal of Agriculture*.*

Alluding to the beautiful appearance of the work produced by modern ploughs at competitive trials, and the decisions of judges, he states that the object appears to be, "first to produce a continuously smooth and unbroken furrow-slice, lying at an angle of forty-five degrees; and secondly, to effect this at the smallest expenditure of power." He objects to furrow-slice "without even a crack," quoting in these words the laudatory language of one of the judges at a competitive trial, on the ground that the real object of ploughing—"the speedy preparation of the seed-bed—is sacrificed to the mere appearance of the surface," and asserts that "whilst a well-pulverized soil is admitted to be an essential condition of a proper seed-bed, the preservation of the form of the sod, which presents it in one hard, elongated, smooth, and unbroken furrow-slice, leaves it in a very unfit state for the purpose." Every practical man must assent, we think, to this. It is true that if such a furrow-slice as that which "An Old Norfolk Farmer" describes is allowed to remain for a length of time, particularly when exposed to frost, &c., the action of the weather will reduce the hard, unbroken mass of earth into a state better suited for attaining the object contemplated by its inversion; "but what," says the writer in the *Journal*—

"What of the clover leys sown with wheat in the autumn upon the up-turned flags, without any other preparation? and ploughed, too, upon the new principle laid down by the judges—of "a furrow-slice without a crack in it"—a hard, continuous, square mass of clay, the upward edge well defined, and the surface smooth and perfect as a brick just turned out of the mould; for such, in plain phrase is the ideal perfection of ploughing, in the

estimation of judges. And this, too, must undergo the operation of rolling before the drill or dibble can deposit the seed; and thus, instead of comminution, to form a seed-bed, the soil is rendered as hard and unfit for that use as the art and implements of the farmer can make it."

This is strong language; but the importance of the matter, and the grave nature of the error which has crept into it—the sacrifice of utility to mere surface beauty—certainly demands that strong language should be used in drawing attention to it. The "Old Norfolk Farmer" blames the judges at competitive trials, especially those of the Royal Agricultural Society of England, and not the implement makers, who are forced "to carry out the absurd ideas of the judges," or run the risk of finding their ploughs condemned.

The writer in the *Journal of Agriculture* considers that light has been thrown on the subject by the efforts of Mr. Smith, of Woolston, who, he believes, has struck into the right path in his "smashing up" system of cultivation; but he considers the Tweed-dale plough "superior to the 'cultivator,'" and believes that "if it can be worked by steam, instead of horse-power, will supply every requirement of cultivation." This is precisely the view taken by Mr. Pentland, whose experience of the Tweeddale plough and sub-soil-trench plough we recorded in our columns nearly four years ago (*FARMERS' GAZETTE*, Sept. 3, 1859), and we know that similar opinions are held by others who have introduced the Tweeddale implements on their farms.

The "Old Norfolk Farmer" insists strongly on the importance of "speedy pulverisation, deep culture, and thorough draining," as "the distinguishing marks of good husbandry." Not deep culture on water-logged soils, or thorough draining followed either by scratch work ploughing, or a system which turns up the land in "hard, elongated, smooth, unbroken furrow-slices," but deep culture preceded by thorough draining, and the use of such implements as will break up the soil in the most effectual manner, for the admission of those sweetening atmospheric influences which are shut out when those essential marks of good husbandry, deep culture and thorough draining, are neglected. Three years ago the writer of this article read a paper on "Deep Cultivation and its results," at a meeting of the Dublin Chemical Society, (see *FARMER'S GAZETTE*, May 5th, 1860), in which precisely similar views were set forth as those which we find expressed by the "Old Norfolk Farmer." Like him, we have long known and felt the importance of this subject, not only to farmers, but the community, seeing that—to use his words—"On this question of comminution and deep culture, united with thor-

ough draining as the basis, depends the future of agriculture," and for this reason we desire to urge the serious consideration of it on our readers.

LEICESTER SHEEP AND THEIR MANAGEMENT.

At a recent meeting of the Boroughbridge (Yorkshire) Agricultural Society, a member of long experience in sheep management, gave an interesting account of the results of various crosses, and found that the largest and coarsest breeds were not the most profitable. He, and his neighbours, had of late years adopted the improved Leicester with entire satisfaction, and the following is given as a correct description of the best specimen of such an animal, which our Canadian readers will find in some important respect not wholly applicable to sheep which pass for Leicesters here, although we have some really good flocks in different parts of the Province, and which are regarded by their owners as the best and most profitable sheep, on the whole, for our climate and pastures:

"The head should be small but rather long, light complexion with fine muzzle, open nostrils, prominent eyes, placid countenance, short thin ears, hidden in wool, the neck not too long, but broad and well filled with flesh, so much so that the head cannot be raised much above the level of the back, the breast wide and deep, and projecting in front of the fore legs, where it should be met by a heavy neck vein; shoulder-blades inclining towards the crops, and hidden in flesh at the summit; girth behind the shoulders deep, the chine forming a straight horizontal line, should be thickly covered with firm flesh, cloven from shoulder to rump, broad loins, the chine here a little convexed than otherwise. The extremity of the rump should be nearly in a line with the back, the thighs well filled and terminating abruptly a little above the hocks; feet well apart, and knees and hocks slightly inwards. The entire surface of the skin, except the muzzle, face, legs and pits, should be covered with long wool of high lustre, varying as little as possible throughout in length or quality of staple, not terminating in too fine a point."

He then goes on to discuss the merits of these sheep. The following extracts from his remarks, include some useful hints:

"The time of admitting the ram to the ewes should be according to the locality and the climate—the second or third week in October is the usual time with us. Stocking is not only productive of more lambs, but is also

economical, as one ram is then equal to upwards of fifty ewes, thereby saving the expense of hiring or purchasing a second ram where that number of ewes are kept. It is essential that the ewes should be marked as they take the ram, in order that they may be housed and have the attention of the shepherd in succession during the lambing season. It is requisite that the ewes should receive a liberal allowance of nutritive food when some weeks advanced in pregnancy, which tends to develop the foetus, in which case strong and healthy lambs generally follow. When the lambing season arrives, those ewes which have to lamb first should receive close attention. The safest plan is to house them every evening, and to visit them at intervals of half an hour or so. In all cases of difficult parturition, allow plenty of time, some hours after the first symptoms, and never attempt, except in rare instances, to extract a lamb without having first put it into position, which must be done with judgment, caution and patience. In all cases where handling has been resorted to, anoint with black oil or other antiseptic, to prevent gangrene or mortification. Should the ewe exhibit symptoms of debility, give gruel with brandy. In favourable weather docking and castration may be performed about the third day after birth, after which housing is essential for two or three nights, when the animals may be turned away altogether, taking care to apply a little paint to the necks of all twin lambs, which not only serves as a safeguard against foxes, but enables the shepherd to recognise them up to shearing. If not placed in fresh pastures, the ewes with pairs should be allowed artificial food, say a mixture of rapecake, malt-cake, oats, &c., with a little condiment added, all of which increase the yield of milk. I would here urge the indispensability of sheep having access to water. The lambs having acquired a taste for cake, &c., through the medium of the dam's milk, soon begin to nibble it. When they take it more freely, the ewes should be deprived of it, by placing it in water-proof troughs, which can now be had at a moderate price, made of corrugated galvanized iron. These are placed in an enclosure, in the fence of which is inserted a hurdle which will admit the lambs only. In the beginning of June the lambs are weaned and put on the best pasture the farm affords, for at this stage the flock owner finds great difficulty to keep them progressing, and a considerable loss of flesh is the result if not well cared for. Early turnips or rape should be provided and a few old sheep should accompany the lambs, to teach them to eat the turnips more readily. When they eat with avidity, the roots should be cut at once, and continued throughout the season. For this purpose Gardner's cutter is the best.

"If lambs are intended for early maturity, say to come out fat in February or March, it

is advisable to draw out the she-hoggets which are intended for breeding purposes, as forcing when young does not tend to their subsequent well being. Ewes intended to be draughted, should be marked soon after lambing, and the lambs weaned early, so that the ewes may be fatted for market. All sheep during summer should be allowed frequent change of pasturage, especially if laid thick upon the ground. Most farmers in this part of the country, I think, clip much too early, for, unless sheep are intended to be slaughtered immediately, clipping in the generality of seasons, is attended with an enormous sacrifice, more especially in the cases of ewes giving suck. Why should we in this comparatively cold climate shear our flocks, some weeks before south county farmers? The thousands of sheep sacrificed by the folly of early clipping in 1860, ought at once to have convinced us all that by premature shearing there is a chance of losing a great deal without the probability of gain. Dipping as soon after clipping as convenient is commendable, as it destroys the tick and the other filth; and when the flies become troublesome, a frequent sprinkling of water, in which sulphur and spirits of tar have been mixed, tends to ward off the flies, and contributes much to the comfort of the flock. I think, however, a second dipping takes weight out of the fleece, which is not easily restored. I would sooner recommend a light smearing in autumn, but the salve wants mixing and applying with judgment, so as not to injure the fleece in the slightest degree."

WASHING AND SMEARING SHEEP.

MR. EDITOR, SIR:—In your *Agriculturist*, the number for July, I see an article on wool-growing, which I think is well worth the attention of all keepers of sheep.

In the first place, wool is a very beneficial crop, and if proper attention be paid to that production, it will return a per centage worth notice.

In the second place, as there seems to be a difference of opinion at present, as to whether wool should be washed or not, (before taken from the sheep), should the latter prevail, it behoves all wool growers to have their wool in as good a marketable state as possible when shorn, and especially free from what is termed here "matted fleeces." The cause of which is either from sickness, or want of proper care and attention, as stated in the articles above mentioned.

For the last three years I have adopted the old English method of dressing sheep for the ticks, and have used washes and ointment, both with beneficial results; but must give a decided preference to the latter, as you can use it in almost all seasons.

I will therefore, Mr. Editor, give you three receipts, if you can find a corner in your valu-

able little work, that may benefit many of its readers,

A wash made from tobacco, well boiled in soap suds, with a little soft soap added, say one pound of tobacco to every twenty sheep, and then put the liquid on with a bottle, so that all the wool is wet. Some have tubs made for that purpose, and immerse them in the fluid; one person taking hold of the head and fore legs, and the other the hind legs, only allowing the head to be out of the liquid.

The other wash is made from arsenic: say ten ounces of arsenic for every twenty sheep, and boiled in soap suds as in the above; as this is a strong poison, great care should be taken to cleanse every vessel used in the preparation.

In the mixing of water in either of the above, you may calculate two quarts of the mixture for every sheep.

The ointment is made from quicksilver and hog's lard. There is a difficulty in the mixing, as it requires a length of time to incorporate it properly, but any apothecary could give the necessary directions.

Therefore suppose I have twenty sheep to dress, take five and a half ounces of quicksilver to twenty six and a half ounces of hog's lard, which will make two pounds of ointment, sufficient for that number.

This dressing only requires doing once a year, about October is a good time, and the whole of the flock should be done, whether it is intended for fattening or breeding purposes, as no cattle can thrive well if infested by vermin.

The ointment is put on by shedding the wool, a row on each side of the back bone, and other two rows parallel on each side, the ointment applied to the skin with the tip of the fore finger of the right hand, having the ointment affixed to the rest of your left hand, in some little tin, or the toe of an old boot will do very well, fixed by a strap.

One and a half ounce is sufficient for one sheep; and when once a man gets into the way of doing it right it is an easy task to do fifty a day; and I feel confident that if I can prevail on any one to try it once, I should have no need to urge a repetition the next year.

There is an old adage attached to this ointment in England; it is said, by using this you may buy a horse, and by employing washes a saddle. Therefore they are both good in their places, as certainly a saddle is better than no saddle at all.

I have made this known to many, some of whom may scan these pages, and testify to the results, and perhaps awaken their minds. "To do unto others as you would they should do unto you."

Yours, &c.,

Oakville, July 29, 1863. A SUBSCRIBER.

REMARKS.

We are much obliged to our correspondent for his useful communication, and shall be happy

to receive from him a statement of the profits arising from ten ewes, to which he alludes in a private postscript. Sheep require in addition to correct breeding, enlightened and systematic attention to their management. Washing them where practicable, and the employment of salves no doubt tend to improve the health of the animal as well as the fleece. In some of the more arid parts of Australia, in dry seasons, sheep are shorn without washing; a circumstance arising from necessity rather than choice. In this country water can generally be found for the purpose without much inconvenience.

In the application of arsenic great care should be observed that the skin is not broken, and that the animals do not lick the parts so treated.

—EDS.]

EXHIBITIONS TO TAKE PLACE THIS AUTUMN.

Provincial and State:

Upper Canada, at Kingston, September 21 to 25.

Lower Canada, at Montreal, September 15 to 18.

New York, at Utica, September 15 to 18.

Ohio, at Cleveland, September 15 to 18.

Iowa, at Dubuque, September 15 to 18.

Vermont, at Rutland, September 8 to 11.

Michigan, at Kalamazoo, September 23 to 26.

Indiana, at Indianapolis, September 28 to October 3.

Illinois, at Decatur, September 28 to Oct. 3.

Kentucky, at Louisville, September 15 to 20.

County and Township.

Eramosa, at the Centre Inn, October 2.

Erin, at Erin Village, October 14.

Puslinch, at Aberboyle, October 6.

Co. Peel, at Brampton, Sept. 15 and 16.

Southwold and Dunwich, at Iona, October 1.

West Elgin, at Wallacetown, October 15.

Co. Lincoln, at Grimsby, October 9.

North Leeds and Grenville, Frankville, October 7.

Vespra Tp., at W. H. Partridge's Farm, October 8.

Renfrew Co., at Renfrew Village, October 7.

McNab Tp., at Arnprior, Sept. 23.

Horton Tp., at Town Hall, Sept. 25.

Admaston, at Town Hall, Sept. 29.

Westmeath, at Beachburg, October 8.

Renfrew Co., Ploughing Match, at Bonchere Point, October 14.

McNab Tp., Ploughing Match, Sept. 30.

North Simcoe, Barrie, September 16.

Oro Tp., at Shanty Bay, Sept. 30.

South Wellington and Guelph Tps., at Guelph, October 8.

East York, at

Oct. 7.

Fullarton, Logan, and Hibbert, at Mitchell, September 30.

Toronto and West Riding York, at Toronto, October 6, 7 and 8.

South Lanark, at Perth, Sept. 17 and 18.

Durham West, at Newcastle, October 8 and 9.

North Lanark, at Almonte, September 15.

Wentworth and Hamilton, at Hamilton, October 14 and 15.

Brockville Elec. Div., Brockville, Sept. 16 & 17.

The Poultry Yard.

THE COCHIN-CHINA FOWL.

Of all the breeds of fowls, none has ever created so great an excitement as the Cochin-China. In the year 1846, the first pair that was brought into this country from Shanghai were presented to the Queen, who exhibited them at the Dublin Poultry Show. Immediately the "Cochin" *furor* commenced. As soon as it was discovered, despite the most strenuous efforts to keep the secret, that a certain dealer was possessed of a pair of these birds straightway the avenues to the dealer's shop were blocked by broughams, chariots, and cabs until the sly poulterer was tempted by a sufficiently high sum to part with his treasures.

Bank notes were exchanged for Cochin chicks, and Cochin eggs were in as great demand as though they had been laid by the fabled goose. Philosophers, poets, merchants, had alike been seized by the mania, and although the latter could hardly come to the price of a real "Cochin," there were plenty of vagabond dealers about with counterfeit birds of all kinds, which were advertised to be the genuine article. For to such a pitch did the excitement rise, that they who never kept a fowl in their lives, and would hardly know a bantam from a dorking, puzzled their brains as to the proper place to keep them, and the proper diet to feed them on. The Cochin is a very hardy bird, and a capital layer, giving us eggs when they are most expensive—and indeed, with regard to new-laid eggs, when they are almost impossible to be got at all. The chickens of such healthy fowls are, of course, easy to rear. A good Cochin should be compact, and large and square built, with a full chest and broad hind quarters. An authority says:—In buying them, avoid long tails, clean legs, fifth toes, and double combs, and, above all, take care that the cock has not, nor never has had, *sickle* feathers. The colours of Cochins are buff, lemon, cinnamon, grouse, partridge, white and black.

I quite agree with Bailey in stating that the cocks should have upright combs, with well-defined serrations; legs feathered to the toes; body slanting from the head to the middle, thence rising to the tail; fluffy thighs and hinder parts; bright eye: long wattle; and deaf-ear; *very little tail*; size and weight very desirable.

Hens—Sharp, intelligent head; small comb, perfectly straight and upright, with numerous well-defined serrations; legs feathered to the toes; great fluff behind and on the thighs; short legs; rise from the middle of the back to the tip of the tail, which should end in a blunt round point; short neck; size and weight very desirable.

The colour of the buff or lemon is:—Cock—pale buff breast; golden hackle and saddle; light chestnut tail, if possible. Hens—buff or lemon throughout, but a few black feathers in necklace not very important; yellow legs essential to both.—*Scottish Farmer*.

POULTRY IN FROSTY WEATHER.

There is something exhilarating in frost.—When the early morning breaks on the earth covered with rime, and the hard ground seems to spurn the foot that treads on it, and the sun rises like a disc of burning copper, there is something cheerful about it. Nature has donned her masquerade dress of white. Your horse cannot contain himself; and the steady old friend for some months past, content to shake his head or whisk his tail, as the only answer to what a grand-daughter of our's calls a "good cut o' the whip," now seeks to devour space, and to try conclusions with your strength or that of your reins. In like manner your tried friend, the old dog, gambols, and, in the gleesomeness of his feelings, he picks up a shred of cloth in the field, and shakes and tosses it for very wantonness. The appearance of real winter is then a holiday for many, but (ah! those *buts*) not to all. It is none to the poultry, Water is frozen; the ground is so hard they cannot scratch; there is not an animal of any kind on its surface; and they must depend on their owner for everything they want. See they lack nothing. First, they must have water.—Few people have any idea of the suffering caused to birds by the lack of water. Their power of maintaining life on the smallest possible quantity of food is wonderful, provided they have water; but a practised eye can tell in a dead fowl or pigeon whether it suffered or not from thirst. The skin becomes hard, dry, and red; the flesh contracts, as it were, and becomes brown, and the whole body looks as if it had been suddenly shrivelled or dried up. You must bear in mind they require more food and better than they do in milder weather; and, if you can, let them have a greater variety. They want substitutes for the worms and insects.—Now, the scraps of meat and fat from the table should go to the fowls. Save the drainings of all the glasses, pour them together, and sweep all the crumbs, and odd corners of bread into it. Feed the birds often, and, if there is snow, sweep a place clean, and feed there. Never feed any kind of bird in such a manner that they shall pick up snow with their food; it is a

strong medicine to them. The lark that fattens in two days on the white hoar-frost becomes a wretched skeleton after two days' snow.—*Cottage Gardener*.

HEN LICE, AND GAPES IN CHICKENS.

I believe I have at last made a discovery, that is very important to the poultry interest of the country, a fact that I wish all poultry raisers to know, I therefore send it to your widely circulated paper for publication. I set it down for granted some years since, that if hatching hens could be kept from what is called hen-lice, or midges, the chicks would not take the gapes or pips, and to prevent that, I have found by frequent experiments that to kill the lice of the hens as soon as they come off with their young broods, is a sure preventive to gapes in their chickens.

My mode, or that of my better half, is to take the hens as soon as they come off with their young, and with common lard or any old grease, saturate them well under their wings and along their sides, and slightly upon their backs, which will kill all the vermin on them, and also off the chicks. Care should be taken not to put on too much, as it will lay the down on the chicks, or mat it so that they are liable to perish in the cool of the morning.

My theory of the cause of the gapes is this, that the vermin from the old hens get on the chickens and crawl into their nostrils and are thence transformed into the gape worm that is afterward found in the windpipe of the chicken and produces the gapes. In this opinion I may be mistaken, but one thing is sure, viz.: keep the vermin off the chickens and they will never get the gapes. The same remedy we have tried with our turkeys, with entire success.—*Ohio Farmer*.

THE BLACK SPANISH FOWL.

A writer in the *Scottish Farmer*, in giving descriptions of the different varieties of poultry, says:

The real Spanish fowl is recognised by its uniformly black color, burnished with tints of green; its peculiar white face, and the large development of its comb and wattle. The hens are excellent layers, and their eggs are of a very large size. They are, however, bad nurses; consequently their eggs should be placed under other hens to be hatched. The Dorking is the most suitable for this purpose, the hens of this species remaining longer with their chicks than any other. "In purchasing Spanish fowls," says an authority, "blue legs, the entire absence of white or colored feathers in the plumage, and a large white face, with a very large, high comb, which will be erect in the cock, though pendent in the hen, should be insisted on." The flesh of

the fowl is esteemed; but from the smallness of its body when compared with that of the Dorking, it is not on an equality with it for the table. Otherwise, however, they are profitable birds, and their handsome carriage, and striking contrast of color in the comb, face and plumage, are a high recommendation to them. For a town fowl they are, perhaps, better than any other variety, their color agreeing well with a smoky atmosphere, and they bear confinement well.

I quite agree with Mr. Bailly, of London, in stating that the cock should be—comb large, erect, single; perfectly white face from the comb to the gill. Long pendent white earlobe, quite free from any mixture of red; ample tail; erect carriage; leaden blue legs.

Hens—very large pendent comb, hanging over one side of the face: face perfectly white everywhere; full breast; body tapering to the tail, which should be ample and carried erect; rather long than short legs; leaden blue legs; upright carriage.

The Apiary.

BEEES AND BEE CULTURE.

The following is an extract, slightly modified from a letter prepared for my friend Langstroth. I copy it for the readers of the *Prairie Farmer*, as it may be of some interest to them:

Increase of Swarms.—We have had no swarms to speak of in this country, this season. My friend Marion of this village, who has three hundred colonies, has had but *one natural swarm*. He has lately divided about twenty old colonies. Full one-half the *natural swarms* issuing this season, go to the woods.

Honey—Honey-dew.—Thus far, this has been the best season for honey that has come under my observation; we have had a large supply daily of *honey dew*, since about the first of June—scarcely a drop of rain has fallen since that date; the drouth is said to be unprecedented.—We are now having a fine shower—this will put an end to the supply, for several days at least. I never saw honey-dew till this season; the oaks and hickories have given a very large supply.—There must be at least a hundred acres of the oak in range of my bees. The largest supply of honey-dew, however, was upon the hickory. I have seen sufficient honey-dew on the leaves of a small hickory to keep a strong colony employed a whole day in gathering it. The honey was principally upon the upper surface of the leaves. I have often seen single drops of the dew that would fill one or two bees. There is likewise a large amount of hickory in this section. Other trees have also given a good supply of this important article.

The winter wheat in this section has rusted quite badly. I am informed that it has been

covered with *honey-dew*, and that the *cause* of rust has been assigned to it.

For some days my bees have worked but little—only mornings when there was a supply of the ordinary dew. We have seen so much dry weather that the honey-dew has dried on the leaves. The bees can gather it, however, while the leaves are moist with the other dew.

The honey gathered from the sources described, has a very pleasant flavor. It is very thick. The colonies of bees in this section, and other localities where I have been, are nearly full of honey—no brood scarcely.

The Cause of Honey-Dew.—The cause of honey-dew is still a mystery to me. I am inclined, however, to the belief that it is produced by the aphides. They are very numerous, and where they are most numerous, there is the largest supply of honey. I have observed no honey on trees where there were no aphides.—But the honey may be found under the trees—on the grass, sticks, and stones. It is thought by some that the aphides discharge the honey while flying. If this were so it would seem that we ought to find this dew on the leaves of certain trees and bushes, in close proximity. By close observation, I find that certain trees, within a few feet of these, having a supply of honey-dew, have none of it upon them. I would call your attention to an article on the causes of honey-dew, given on the 29th page of the *American Bee Journal*. At present, I cannot fully endorse the writer's views.

Bass-wood—White Clover.—The bass-wood season is over. This tree did not blossom as full as usual this season. We usually have sufficient bass-wood blossoms to keep our bees busy about ten days. We have had a fine crop of white clover. The drouth put an end to the supply about the 4th of this month—July. The season being dry, it secreted an immense supply of honey. A large percentage of the crop has failed to mature, in consequence of the drouth. As we are having a fine shower, the probability is we shall have an excellent second crop.

M. M. BALDRIDGE.

Kane Co., Ill., July 1853.

—*Prairie Farmer.*

ITALIAN BEES.

Bee culture is beginning to receive more attention in Canada than formerly, and we have seen this summer two or three instances in which it is conducted on a rather extensive scale, and certainly with distinguished success. The Italian species, which has of late received much attention and commendation in the neighboring States, is as yet but little known in this Province. The subjoined article from our excellent cotemporary, *The Country Gentleman*, will be found to contain

much that is interesting and of practical value in relation to the habits and management of these busy and useful little creatures :—

Having had more than three years' experience with these bees, I send you some important facts respecting them, which have fallen under my own observation, and which I believe have not yet been given to the public.

1. The queens are not only more prolific (as previous writers have remarked,) than those of the common kind, but are much more disposed to keep their brood *completely* in the combs. An Italian Colony will often have in two or three combs, as large a surface of brood as the black queens will ordinarily have in four or five. This habit of *squaring* out their work, is more particularly noticeable in the early part of the season, and its importance will be readily appreciated by every bee-keeper.

2. *The Italian bees, when forage is abundant, are far less disposed to rob than the black bees.*

As this fact is not only highly important, but directly contrary to the common opinion, the evidence of it will be given somewhat in detail.

Having purchased, last summer, a number of stocks of black bees, in moveable comb-hives, I examined them when the fruit trees were in blossom, in order to learn the condition of each colony. After a few hours spent in this work, the bees would follow in great numbers whenever they saw me approach a hive to open it. I was very much surprised to notice that nearly all the robbers were black bees. I cannot be mistaken as to this fact, as both myself and my son spent some hours, for several days, in examining those hives. Some drone-combs, having honey in them, were exposed to the bees, so that when emptied they might be used for breeding Italian drones, and these combs were soon covered with black bees, very few Italians alighting upon them, although I had a large number of strong Italian colonies. This year, having only a few black bees, and more than eighty Italian colonies on my own premises, nearly all the bees that attempt to rob hives when they are opened, or to alight upon combs containing honey are of the black kind.

I have pointed out these facts to many who have visited my apiary, and the general opinion is, that when forage is abundant, Italian bees are so eager to gather honey from the blossoms, that they have very little inclination to secure it from other sources. It would be difficult to over-estimate the importance of this peculiarity in an apiary where moveable-comb hives are used, and where artificial swarming, and other manipulations which require the hives to be opened, are practised.

It is true that when forage is scarce, the

Italian bees are as much disposed to rob as the black, if not more so; but the assertion that they cannot be kept near stocks of black bees, without robbing them of their stores, is erroneous. Mr. Quimby, who has had excellent opportunities for testing this point, has said enough to convince any unprejudiced bee-keeper that they may be safely kept in close proximity to common bees, and my own experience perfectly agrees with his.

3. *The Italian bees will work upon the second crop of red clover.*

Three years ago I had 12 swarms of black bees early in June, to three of which I gave Italian queens. The hives were tolerably well filled with combs by the black bees, but before the young Italians began to gather stores, the honey harvest was nearly over. In August the state of my health prevented me from making any observations, but a member of my family noticed that while the three colonies with Italian queens were working vigorously, the other nine were doing very little. In September I found that the Italians had their winter's supply, while the best of the others had only a few pounds of honey, the season proving one of the worst that I ever knew. The black colonies were broken up, and the bees added to other stocks, while the Italians wintered in good condition. I am now satisfied that the Italians obtained their August stores from the second crop of red clover. Last August I noticed the Italians working vigorously on the red clover, and saw very few black bees upon it. Mr. C. W. Taylor, of Hulmeville, Bucks Co., Pa., who has been so successful in rearing these bees, wrote me last summer, that his bees were filling boxes and frames with honey gathered from red clover, while the black bees in his vicinity were doing nothing. Other persons have written to me to the same effect.

In regions where buckwheat is not much cultivated, and where fall forage is scarce, this peculiarity of the Italian bees will in some seasons make the difference between a handsome profit and a severe loss in bee-keeping.

While it is true that some foreign writers have asserted that these bees will work upon the red clover, I have not met with any statement that they scarcely notice the *first* crop, but confine their operations almost wholly to the *second* crop, or seed clover, which blossoms when the white clover has passed out of bloom, or yields little, if any honey.

I will state, as a matter of interest to bee-keepers, that the three Italian colonies before mentioned produced me the second season 350 pounds of honey, and one large swarm.

L. L. LANGSTROTH.

Oxford, Butler Co., O., May 29, 1863.

Horticulture.

TORONTO GARDENERS' IMPROVEMENT SOCIETY.

The regular Monthly Meeting of this Society took place on the 17th ult.

Present—Messrs. J. Fleming, S. Ashby, E. Townsend, C. W. Lawton, G. Vair, G. Tattle, S. Turner, C. Young, G. Leslie, A. Pontig, B. Love, H. Defries, and J. Forsyth.

Mr. S. Ashby in the Chair.

Mr. Fleming exhibited cut flowers of an excellent variety of *Gladiolis*, a very showy plant at this season of the year, likewise some *Fuchsias* and *Asters* which were very fine, also a *Verbena* that he imported last season, named *Foxhunter*, which promises to eclipse any of the varieties yet out, a distinct scarlet of strong habit and a free bloomer, in short all the properties of a first-class *verbena*.

Mr. J. Turner also exhibited a few very fine flowers, amongst others an excellent collection of *Liliputian Dahlias*, which he seems to excel in growing to perfection.

The subjects discussed were the culture of Orchard-House Fruits, and the successful growing of the *Dahlia*. On the former subject Mr. G. Vair read the subjoining paper, and was followed by others in an equally instructive style, eliciting many practical and useful suggestions.

On the culture of the *Dahlia*, Mr. Turner gave an outline of his mode of treatment for the season. In raising his young stock—if roots were plentiful—he would prefer plants obtained from dividing the roots to struck cuttings, as he thought they would be found to grow stronger and bloom earlier and freer than from cuttings. The time of planting out would be from the middle of May to the first of June, much would depend upon the season and forward state of the plants.

The soil best suited to the *Dahlia* he believed to be a moderately rich sandy loam not too retentive of moisture, the situation partially shaded from the mid-day sun and sheltered if possible from high winds.

When the tops are destroyed by the early frosts in the autumn he would cut them down, not too close to the roots, which may be allowed to remain and ripen well in the ground as long as the weather will permit, choosing a fine day before severe weather comes on to take them up, allowing them to dry in the sun, and then stow them away for the winter. An open shelf under the stage of a greenhouse, or a dry airy cellar where the frost can be kept out will suit the purpose well. After some farther remarks by other members of the society the meeting adjourned.

J. FORSYTH, Sec.

ORCHARD-HOUSE FRUIT CULTURE.

By Mr. G. Vair.

The cultivation of fruit trees in pots and tubs has engaged the attention of many, and that more particularly in the last six or seven years, and it now has been proved without a doubt that in Canada fine peaches, apricots, nectarines and pears may be grown by the above system without any great amount of practical or scientific skill. For the successful carrying out of this very important system of fruit culture the public are indebted chiefly, if not entirely to Mr. Thomas Rivers, Nurseryman, Sawbridge-worth, England. That the system has many advantages cannot be denied, enabling the grower to have fine fruit at a very early season of the year, by the application of artificial heat or even without it. In this rigorous climate of Canada, (I speak more especially of the vicinity of Toronto), the cultivation of the peach has defied the most careful and experienced, and I have no hesitation in saying, that the above system is just the thing that was wanted. This is evinced by the many structures that have been erected within the last five years in the City of Toronto, and other places throughout Canada and the States. I regret that this important subject has fallen on me to speak upon, as I would have gladly listened to some one or other of the many competent persons composing the society. I will preface my remarks by briefly stating my small experience in the matter.

As to the best kind of House for the purpose; they may be of any size, according to the mind or will of the owner. I would recommend that the building stand north and south and span roofed, thereby admitting light and air on all sides.

With regard to the kind of trees to be grown I would recommend that where the houses appropriated for that purpose are large, a portion of the trees be grafted on their own roots, placing them in tubs and plunging up to the rim. The sort I mean to be so treated are peaches and nectarines, thereby making pretty large trees that will bear a considerable quantity of fruit. Of course they will not come into bearing so soon as those that are grafted upon the plum, of which three parts of the whole ought to be, they fruit early, grow dwarf and bushy, and will not take up a great deal of space. Nurserymen using the plum ought to be very careful in choosing none but the most healthy and vigorous. If not healthy they will not be found to do, so well as the stock does not grow so fast as the head. I think it commendable for parties that grow largely that they ought to have some young stock on hand, thereby replacing any sickly or exhausted tree which ought not to be permitted to remain in the house at all.

I will now make a few remarks on the system of potting, soil, watering, ripening of the core, &c. I do not think it necessary to have them in large pots. The best peaches I had last year

were grown in nine and ten inch pots, and that of excellent size and flavour. They may be shifted into a large size if you want large plants. But the purpose I take to be not to have the trees larger than can be placed on the dining-room table without inconvenience. The soil I use is a good turf loam, rather approaching to clay and sand, a few crushed bones, charcoal and a little well rotted heated manure. This I pack in around the plant very firmly with a dull pointed stick; this I think a good plan. Previous to starting the trees in spring, I procure a box or large tub, taking some sheep dung, and old hot-bed or cow dung, and mix all up together with soft rain water, I then immerse the pot or tub in this mixture, leaving them until thoroughly soaked through, then put them in the place to grow, again mulching the pot with some well-rotted manure to keep the sun from penetrating too far—the tree being now leafless. This will keep the soil moist for some time, the less water they get the better until they start, as it only tends to exhaust and wash out the mixture given previously. The thermometer may stand about forty to forty five at night for some time, and as they begin to swell that may rise to fifty or fifty-five. They ought to be mulched frequently during the growing season, but this should be discontinued entirely when the fruit approaches maturity, as it will only tend to vitiate the flavour. They ought to be pinched back two or three times during the season to make them bushy, and likewise concentrate the fruit buds for the next year.

When the fruit is pinched the trees may be placed outside under the influence of the sun and air when they will be found to mature much quicker—I mean the ripening of the wood. Syringing ought not to be neglected for a single night during the growing season, except when in blossom, as they are almost sure to get red spider, and if these once get numerous they are difficult to overcome. The peach is subject to the *borer* in the house, as well as in the garden or orchard. I examine frequently at the base of the stem, and if the borer is found I clean and pare out the wound with a sharp pointed instrument and stop with grafted wax. The most commendable fruits for orchard house culture are, first the peach, second the apricot, third the nectarine. Pears I do not think are worth troubling with, except it be a few early sorts. Cherries are not adapted for the orchard house, as they seldom set well indoors in this locality. The following sorts I have found to do well.

1. PEACHES: *Coolridge Favourite, Early York, Crawford, Large York, Morris White, Noblesse Barrenton, Royal George, Kensington, Mixen Freestone.*

2. NECTARINES: *Stanwick, Downton.*

3. APRICOTS: *Moorpark, Early Golden Red Masculine.*

FRUIT ON GRAFTS.

MR. EDITOR.—Will a graft in all cases bear the same fruit as the tree from which it was taken? I suppose your readers will answer in the affirmative, I would once have done so, but cannot now. In the spring of 1859, I took grafts from a Doyenne d'Ete, and inserted two in a Jargonelle I had grafted in a seedling pear some few years before. I grafted it about a foot above the first graft, both grafts grew and the following spring I removed one of them. The one left grew rapidly, and last year it bore about a dozen pears, but not Doyenne d'Ete, which is an early summer pear, but the pears on the graft were hard in October and I do not know that they ever became mellow. The fruit is the same this year as the last; you will receive a sample with this communication. I should be pleased if you, Mr Editor, or any of your readers, can give a satisfactory reason for such a freak of nature.

Respectfully yours,

L. FAIRBANKS.

Whitby, 24th August 1863.

[The specimen of fruit sent with the above communication is small and green and very hard. We are of opinion that our respected correspondent must have made some mistake in selecting the scion from the Doyenne d'Ete pear tree. Probably a shoot of the seedling stock that the Doyenne was grafted on may have grown up with the grafted scion, and may have continued to grow unobserved for years; and we should infer that the graft must have been selected from a branch of the original stock under the impression that it was the Doyenne. The specimens of fruit received are doubtless the produce of the common pear stock, raised from the seed. It would be quite incredible that a scion taken from a bearing tree of the Doyenne Pear and grafted on another pear tree of any sort would produce such worthless gritty fruit as these specimens.—Eds.]

DEATH TO FUNGI.

It is so long since I had occasion to communicate with you that I fear you will almost have forgotten me. I have made, however, a little discovery which I think may be of some use to horticulturists, and it is this which induces me to trouble you again. Some three years ago I was consulted by a large brewing firm about the mould which in warm weather attacks the inside surfaces of their beer barrels. When the empty barrels are returned they are washed, steamed, and dried by hot

air. If kept for two or three days before they are again filled with beer, they become partially coated on the inside with a minute fungus, and it was found that the beer put into such barrels speedily became sour. The idea occurred to me that this fungus was the cause of the mischief, and that it acted on the saccharine matter of the beer much in the same manner as the "vinegar plant" acts on a solution of sugar—that is, it converts the sugar into acetic acid. I proved this to be the case by a carefully conducted series of experiments. The question then arose—how can the growth of this fungus be prevented? I tried many chemicals, and several answered perfectly, but unfortunately those which succeeded best were poisonous, and could not be used practically. At last, remembering that sulphur had been found to be the most useful remedy for the odium, and knowing that its action must be due to very slow oxidation, and consequent evolution of traces of sulphurous acid, the thought occurred to try the effect of a solution of bisulphite of lime. I tried this on a number of beer casks after they had been washed, and no trace of fungus appeared. Beer put into these casks kept sound from six to seven times as long as that which was put into casks which were coated with fungus. The firm alluded to now use it in all their casks, and the beer is found to keep sound very much longer. Starch makers are very much pestered in summer with fungi. I recommended the use of bisulphate to the largest starch manufacturer in London, and he has found it a most effectual remedy. Last summer I advised many of my country friends to give it a trial as a remedy for vine disease, and they have found it to be most efficacious. One friend living in Essex, and having several greenhouses, tried it on four vines which for several years had been much infested with oidium, and never produced any eatable fruit. Last autumn he washed the stems with the bisulphite, and again this spring. He likewise washed the walls with it, and now keeps two or three saucers full constantly exposed in the greenhouse. It gives off a small quantity of sulphurous acid, and effectually keeps down the green vegetation which is so often seen on the walls of greenhouses. He tells me the vines thus treated are the most healthy he has, and have a splendid show of blossom. His report, indeed, is so favourable, that I am induced to hope that a remedy for vine disease has at last been discovered, and that you will be pleased to give it a trial. I shall be very happy to send you a few gallons, should you, from the above statements, think it likely to be of value. I am having trials made on potatoes.—*Hy. Medlock. Chemical Laboratory, 20 Great Marlborough Street, W.—Gardener's Chronicle.*

Miscellaneous.

TO MAKE POTATO STARCH.—Starch made from the common potato, furnishes an excellent substitute for arrowroot as a wholesome, nutritious food for infants. It also makes a good, cheap pudding for the table if cooked like sago; and as it has not the medical properties of the arrowroot, it is much to be preferred as an article of daily food, except for children who are subject to diarrhoea or summer complaint. The process of making the starch is simple, and the time required so short as to put into the power of every one having the means at hand. Wash any quantity of potatoes perfectly clean, and grate them into a tub half full of clean cold water; stir it up well; let it settle, and then pour off the foul water; put the grated potatoes into a fine wire or coarse hair sieve; plunge it into another tub full of clean, cold water and wash the starch through the meshes of the sieve and throw the residue away; or wash it again if any starch remains in the pomace; let it settle again, and repeat this process until the water comes off clear; scrape from the top any remains of the pomace; then take the starch out, put it in on dishes to dry in a warm room, and it will be fit for use immediately. When wanted for use, mix as much as may be needed in cold water, and stir it into boiling milk, or water if preferred, and it requires no further cooking. It also makes a stiff and beautiful starch for clearing thin muslins and laces.

DESOLATION IN MISSISSIPPI.—A correspondent of a western paper writes from Young's Point as follows;

The whole country from Milliken's Bend to Hard Pines, opposite Grand Gulf, a distance of sixty miles, is one "abomination of desolation." It has been an earthly paradise. Lordly palaces filled with pictures, statues and articles of *virtu*. Beautiful gardens teeming with floral beauties, are now all laid waste.

In those magnificent halls, where southern beauty and chivalry were wont to revel and drink deep of the red wine of pleasure, soldiers cook their despised "sow belly" with fires built of rosewood chairs and curiously carved furniture, sleep on cotton beds worth fifty dollars each—i. e. at any "Lowell mill"—and in the morning abandon all to the horde of filthy hungry negroes who follow the army and gather its refuse, like troops of unclean birds which smell the carcass from afar.

Among these rich nabobs none excelled the Hon. John Perkins. His dwelling is magnificent, even in its ruins, and his gardens are still fragrant with acres of roses. When General Butler entered New Orleans, he chartered the *Magnolia*, one of the largest boats on the river, put his most valuable slaves, pictures, plate, cattle, &c., on board, and set fire to the rest. For seven miles his lands blazed with 5,000 bales of

burning cotton and granaries of corn. His house with its furniture, which cost \$200,000 in Paris, and the houses of his overseers, all were fired, while he stood on the bank and watched the mighty conflagration. In the morning he embarked, a ruined man.

I had never dreamed of such Arabian magnificence as I find in the ruins of these rich planters. In one garden I found no less than seven hundred different varieties of roses. This, I believe is the largest collection in America. There are not more than three in Europe that equal it. The fragrance of these beautiful flowers overpowers the noisome vapours of swamps and bayous.

THE YEW TREE IN THE CHURCHYARD.—Wotton, the editor of *Welsh Laws*, adds a note to this passage to explain that "the yew tree of a saint" is one dedicated to a saint, as Dubritius for example, or Tello, such as are frequently found in the churchyards of Wales. The fact that it is the native British church that we find these sainted trees carries us back for the origin of our churchyard yews to a time more ancient than the conversion of the Saxons. Many of the existing trees appear, from a comparison with those of known date, to be as old as the Saxon times. From the great number of them which still remain it seems probable that they were generally, if not always, planted in our old churchyards as a necessary part of their furniture. Sometimes we find a group of them which might have sheltered a congregation from sun or rain. Sometimes there are four, one at each corner of the churchyard, as if they had been intended to mark out the area of the churchyard. But much more commonly there is only one, and that is usually on the south side of the church, near the usual site of the churchyard cross. What were they so generally, if not universally, planted for? A good deal of learned research and ingenious conjecture has been bestowed upon the question, but without eliciting any very satisfactory conclusion as to their original use or intention.—*The Churchman's Family Magazine*.

THE FOOD OF THE RUSSIAN PEASANTS.—

Practice and native shrewdness had long ago taught the Russian peasant the importance of large quantities of soft carbon being taken into his animal system; important against the cold of that climate, and still more important as a corrective of the large quantity of plain bread he delights to consume; three pounds a day generally, and five pounds during harvest, over and above his *kasha*, or boiled millet, eggs, milk, salted cucumber, mushrooms, cabbage, and not unfrequently supplies of beef. The sort of bread he prefers is rye, and prefers it for the same reason that the acute Scottish ploughman clings to his oat cake, and discerned long before the days of Liebig that it was chemically more strengthening to muscular fibre than expensive wheaten flour. So here

having his dear "black" bread, as well as most other articles of his food, fried up in abundance of rich linseed oil or on high days and holidays with sunflower oil, the hardy denizen of the woods of Archangel, or the roamer over the steppes of Tamboy, is able to prosecute his work through all seasons of the year in spite of even Siberian weather.—*Professor Smyth's "Three Cities of Russia."*

PRICES OF NEW DAHLIAS.—The following high prices have been given by members of the nursery trade to amateurs who were so fortunate as to raise new varieties of merit;—Beauty of Telford was the first that commanded a high price; this variety was raised by the Rev. S. B. Ward, of Telford, in 1835, and was purchased by the Messrs. Brown for £60. Yellow Defiance, purchased by the same firm, at £200, the highest amount, we believe, ever given for a dahlia; it was sent out in 1840. Essex Triumph raised in 1841, was sent out in 1843, at £60. Marchioness of Ormond, £100. Shyllock, Beeswing, Alice, and Cleopatra for £100 each. Lady Sale, £70. Nonpareil, Sir John Richardson, Duke of Wellington, Bob, Sir. R. Whittington, and British Queen, £50 each. And Queen Victoria came out in 1835, £105. We have not heard of such prices being obtained since.—*Scottish Farmer.*

TAKE CARE OF YOUR POOR FEET.—"Of all parts of the body," says Dr. Robertson, "there is not one which ought to be so carefully attended to as the feet." Every person knows from experience that colds and many other diseases which proceed from colds are attributable to cold feet, the feet are at such a distance from "the wheel at the cistern" of the system that the circulation of the blood may be very easily checked there. Yet, for all this, and although every person of common sense should be aware of the truth of what we have stated, there is no part of the human body so much trifled with as the feet. The Young and would-be genteel-footed cramp their toes and feet into thin-soled bone-pinching boots and shoes, in order to display neat feet, in the fashionable sense of the term. There is one great evil against which every person should be on their guard, and it is one which is not often guarded against—we mean the changing of warm for cold boots or shoes. A change is often made from thick to thin-soled shoes, without reflecting upon the consequences which might ensue. In cold weather boots and shoes of good thick leather both in soles and uppers, should be worn by all. Water-tights are not good if they are air-tights also. India-rubber overshoes should never be worn except in wet splashy weather, and not very long at once. It is hurtful to the feet to wear any covering that is air-tight over them, and for this reason India rubber should be worn as seldom as possible. No part of the body should be allowed to have a covering that entirely obstructs the passage of carbonic acid gas

from the pores of the skin outwards, and the moderate passage of the air inward to the skin. Life can be destroyed in a very short time by entirely closing up the pores of the skin. Good warm stockings and thick-soled boots and shoes are conservators of health, and consequently of human happiness.

COAL ASHES FOR GARDEN WALKS.—As many persons have at this time large heaps of coal ashes, they can dispose of them in no way to better advantage than by hauling them into their garden alleys. Remove from four to six inches of the dirt, and having screened the ashes, or separated the core and cinders, first apply the coarse stuff, then oyster shells if you have any on hand, small stones, glass or pieces of bricks, and top-dress with the ashes. Roll it, and you will have one of the best walks ever seen in a garden. The ashes become very hard, and are never wet, winter or summer, if the weather gives the water the least chance to get away. In summer, in five minutes after a shower there will be scarcely enough moisture to dampen the soles of your shoes. If there is not sufficient ashes for all the walks, commence with the principle ones, and in a couple of years the garden will be complete. Then, each spring after, give them a slight top-dressing of the ashes, which will about consume your annual stock.—*Germantown Tele.*

CUT WORMS ON THE CABBAGE PLANT.—Mr. J. P. Jewett, of Lowell, writes to the Main Farmer, that after being baffled in his attempts to raise cabbages, by the depredations of the cut-worm, he adopted the plan of wrapping the stalk of each plant in paper, and succeeded. He says,—"I selected my plants, wet them, and wound a small piece of paper around the stem of each plant, commencing at the root and extending up, so as to enclose the stem and some of the lower leaves. It is easily done with the thumb and fore-finger, giving it a slight roll two or three times round, being damp, it easily retains its position." "In transplanting," he says, "let the paper be covered about half an inch with earth, while it extends up about an inch, and this is sufficient to protect the stem where the attack is always made." Mr. Jewett is entitled to the thanks of the community, for thus promulgating the results of his simple but sensible experiment. We know that many persons have been obliged to abandon the cultivation of cabbages because of the ravages of the cut-worm, who would gladly resume it if the paper wrappers will prevent the greedy vermin from destroying the young plants.

DISAPPEARANCE OF THE VINE DISEASE.—Dr. Telephe, of Bordeaux, has been the first to remark, that since the appearance of odium the large kinds of edible fungi, and especially

boleti, have disappeared from those localities where the vine has been diseased. This observation was made known in 1853 to the Linnean Society of Bordeaux: and it has been remarked that since the minute cryptogams (such as *Erysiphe oidium* on the vine, *Botrytis* on the potato, and *Ustilago carbo* on the maize) have been attacking and destroying these necessaries of life, so have the large kinds of mushrooms been comparatively rare. But since the autumn of 1862, the *Agarics* and *Boleti* have reappeared in great quantities about Bordeaux, and the markets of this large town have been encumbered with them. From this fact, Dr. Desmarts considers himself justified in fortelling the final disappearance before long of the vine disease.—*Les Mondes*.

LOVE OF THE FRENCH FOR FLOWERS.—The passionate love of flowers is a marked characteristic of the Parisians, and the sale of flowers is in Paris an extensive and lucrative branch of trade. It is computed that the various little patches of ground in the vicinity of the French capital, appropriated to floral cultivation, realize an annual income of 32,000,000*l.*, and give employment to 500,000 persons. In Paris alone there are no fewer than 284 florists, and on occasions of public festivity, their conjoint traffic not unfrequently amounts to 70,000*f.* At a *fete* given last season by one of the foreign ambassadors, the cost of the flowers was 22,000*f.*

HOW TO BLANCH CELERY FOR EXHIBITION.—Of all the exhibitions we have ever seen, Bolton, in Lancashire, takes the lead for the admirable manner in which the vegetables are staged, everything being so clean and orderly, even the potatoes, leeks, and celery, are as clean as new pins. What, however, struck us most, was the clear white color of the celery, from the root to nearly the top being quite free from diseased specks and discolorations. On enquiry, we find it is the practice not to earth up the celery at all, but simply to tie it up as it grows, and wrap coarse paper round it, occasionally removing it for the purpose of seeing that the stalks are growing straight, or to assist them in doing so, when wanted for exhibition purposes.—The flavor may not be quite so good, or quite so crisp, as when grown in the ordinary way, but the color is certainly much better for exhibition purposes when grown in this way, and is not inferior in size. The new imperial pink celery appears to us to be the best of the pink or red kinds for showing, as it produces very little heel, and is a large growing, solid, crisp, fine flavored kind. The new imperial white is fully equal to it, the only difference being in the color. In fact, the former, as shown at Bolton, was bleached to almost a clear white.—*Gossip of the Garden*.

CHINESE SHEEP IN EUROPE.—Mr. Legable has presented to the Society of Acclimatization of Paris, three Chinese sheep, part of a flock he says he has had for several years, numbering at the present time more than three hundred. Their fecundity is remarkable. The ewes breed regularly twice a year, and produce from two to three lambs, and even up to five at each birth. The director of the School Farm of the Vosges, informs M. Legabbe that one ewe has produced ten lambs within the year. The wool is at least as good, he adds, as that of other sheep, but owing to the breeding habits of the females, the quantity is somewhat less. Although the ewes manifest no unwillingness to bring up their whole family, it has been found desirable to allow them to suckle only two lambs each, goats being kept as nurses. At a recent meeting of the above named society of Great Britain, it was stated that the flock of Chinese sheep were in a thriving condition; all that were offered for sale were readily purchased, and there is a demand for more. Lord Powerscourt reported the birth of four lambs in one of his ewes. Five lambs were added to the flock of the society in September.—*English Paper*.

BIRDS AS DESTROYERS OF INSECTS.—A distinguished naturalist, M. Florent Prevost, conceived the idea that it would be a matter of great interest to collect, at different periods of the year, the stomach of every description of bird he was enabled to procure, to examine and preserve its contents. This collection, commenced thirty-five years since, has now reached a considerable size. The stomachs, opened and dried, together with their contents, are fixed on cardboard, upon which are inscribed, besides the name of the species of the bird, the indication of the locality and the date of its death, together with the names of the animals or plants which have been recognised as forming part of the contents of its stomach. It results from these researches that birds are in general far more useful than hurtful to the agriculturist, and that the mischief done at certain periods by the granivorous species is largely compensated by the consumption of insects they effect at other periods.—*Medical Times*.

RICE AS FOOD IN INDIA.—Rice is the favorite food of the people of India; but, except in Arracan and a few other districts in which it constitutes the chief and almost only article cultivated, its use is confined to the richer classes throughout the country. Millet constitutes the chief grain food of a considerable portion of the people. The average annual export of rice from America for the past eight years has been 112,000 tons. The Burmese recognize nearly a hundred varieties of rice, but the principal distinctions between different kinds are as follows:—hard grain, soft

grain and glutinous rice. The Natslong is the hardest grain and is the rice which is principally shipped to Europe. The Meedo is the chief of the soft grain varieties. It is much preferred by the Burmese to the hard-grained sorts, and it is certainly superior in taste when cooked; but the hard-grained rice is chiefly purchased by the merchants for export, as it keeps better, and the soft-grained rice is too much broken by European machinery in cleaning. Latterly, on the continent, this last objection appears to have been overcome, and a greater demand is constantly springing up for the meedo rice for the markets of Europe. The Koungnyeem or hill rice is called glutinous rice by Europeans, from the property it possesses, when cooked, of the grains all adhering in a thick glutinous mass. It is the chief article of food with the hill tribes, but it is not much eaten by the inhabitants of the low, swampy plains, where the common rice is grown. Rice is used as food for man, beast and bird, for the manufacture of starch, distillation of spirits, &c.

CHANGING HIS CLOTHES.—For sometime, writes the distinguished author of "British Butterflies," previous to changing his dress—even eating is nearly or quite suspended—the caterpillar becomes sluggish and shy, creeping away into some more secluded spot and there remaining until his time of trouble is over. Various twitchings and contortions of the body now testify to the *mal-aise* of the creature in his old coat, which though, formed of a material capable of a moderate amount of stretching, soon becomes outgrown, and most uncomfortably tight-fitting, with such a quick-growing person inside of it; so off it must come; but it being unprovided with buttons, there's the rub. However, with a great deal of fidgeting and shoulder-shrugging, he manages to tear his coat down the back, and lastly, by patient efforts, shuffles off the old rag; when lo! underneath, is a lustrous new garment somewhat similar, but not exactly a copy of the last, for our beau has his peculiar dress for each epoch of his life—the most splendid being reserved for the last. This change of dress ("moulting" it is sometimes called) is repeated thrice at least in the creature's life, but more generally five or six times. Not only does the outer husk come off at these times but, wonderful to relate! the lining membrane of all the digestive passages, and of the large breathing tubes is cast off and renewed also.

USE OF ICE.—To drink ice cold liquid at meals retards digestion, chills the body and has been known to induce the most dangerous internal congestions. On the other hand, ice itself may be taken as freely as possible, not only without injury, but with the most striking advantage in dangerous forms of disease. If broken in sizes of a pea or bean, and swallowed as freely as practicable, without much chewing

or churning between, it will often be efficient in checking various kinds of diarrhoea, and has cured violent cases of Asiatic cholera. A kind of cushion of powdered ice kept to the entire scalp, has allayed inflammation of the brain, and arrested fearful convulsions, induced by too much blood there. Water as cold as ice can make it applied freely to the throat, neck and chest, with a sponge or cloth, very often affords miraculous relief, and if this be followed by drinking copiously of the same ice-cold element, the wetted parts wiped dry, and the child be wrapped up well in the bed clothes it falls into a delightful and life-giving slumber. All inflammations, external or internal, are promptly subdued by the application of ice or water, because it is converted into steam and rapidly conveys away the extra heat, and also diminishes the quantity of blood in the vessels of the part. A piece of ice laid on the wrist, will often arrest violent bleeding at the nose.—*Hall's Journal of Health.*

CITY HAYMAKERS.—Such was the surrounding of one city church-yard that I saw last summer on a Volunteering Saturday evening, towards 8 of the clock, when with astonishment I beheld an old man and an old woman in it making hay. Yes, of all occupations in this world, making hay! It was a very confined patch of churchyard, lying between Grace-church street and the Tower, capable of yielding, say an apronful of hay. By what means the old man and woman had got into it with an almost toothless hay-making rake, I could not fathom. No open window was within view; no window at all was within view sufficiently near the ground to have enabled their old legs to descend from it; the rusty churchyard gate was locked, the moldy church was locked. Gravely among the graves they made hay, all alone by themselves. They looked like Time and his wife. There was but one rake between them, which they both had hold of in a pastorally loving manner; and there was hay on the old woman's black bonnet, as if the old man had recently been playful. The old man was quite an obsolete old man, in knee-breeches and coarse gray stockings; and the old woman wore mittins like unto his stockings; in texture and in color. They took no heed of me as I looked on, unable to account for them. The old woman was much too bright for a pew-opener; the old man much too meek for a beadle. On an old tombstone in the foreground, between me and them, were two cherubims; but for those celestial embellishments being represented as having no possible use for knee-breeches, stockings or mittins, I should have compared them with the haymakers, and sought a likeness. I coughed and awoke the echoes; but the haymakers never looked at me. They used the rake with a measured action, drawing the scanty crop towards them; and so I was fain to leave them under three yards and a half of darkening sky, garvly making hay among the

graves; all alone by themselves. Perhaps they were spectres, and I wanted a medium.—*Dickin's All the Year Round.*

SPORTING CHALLENGE FROM VICTORIA.—

Austria challenged England in Cricket, and, as the result proved got well beaten. Victoria now issues a challenge to English sportsmen to a match for £10,000, between English race-horses and the best of our Australian breeds, the race to be run in this province. The proposition, as it at present stands, is somewhat in this form: a match for 5000 sovs. a side; weight for age; three miles on the Melbourne course. The number of English horses to be named unlimited. The colonies to be restricted to naming twenty. one to the post, &c. This would give us a match between the best horse in Australia and the best that England would send us. The amount has been already subscribed here; and Mr. Walter Craig, of Ballarat, a right good sportsman, who goes home by Great Britain on the 1st of May, has been authorised to make the match, and to deposit a certain proportion of the stakes. Surely some adventurous spirits will be found in the old country to take up the gauntlet thus thrown down. Horses which are second-class in first-rate fields would be most formidable here, and would be all but certain of carrying off the stakes. Whilst on the subject of sporting, it may not be amiss to mention that already preparations are being made to receive with a proper amount of *eclat* the team of cricketers who are expected to do battle for the honour of their country early next year. Passages have been secured for the whole of them by the Great Britain steamer on her return voyage from England in September next.

SURGERY IN AFGHANISTAN.—The Afghans, from their rough and hardy life, acquire by experience very practical, though, to be sure, uncouth, methods of righting themselves, their horses and cattle, when they may suffer from accidents. Their operations for the reductions of dislocations in the human subject are most original; and, if report speaks at all truly, equally successful.

For a dislocation of the thigh, the unfortunate patient is sweated and starved for three days in a dark room, the atmosphere of which is heated by fires kept going night and day; and the effects of this high temperature are increased by drenching the patient with copious draughts of warm rice-water or thin gruel. During the interval that this treatment is enforced on the patient, a fat bullock is tied up and fed *ad libitum*, with chopped straw flavored with salt, but is rigidly denied a drop of water. On the third day the patient is made to ride the bullock or buffalo astride, a felt alone intervening between him and the animal's hide; his feet are next drawn down and fastened tightly under the animal's belly by cords passing round the ankles. All these pre-

liminaries arranged, the animal is then led out to water, and drinks so greedily and inordinately that its belly swells to nearly double its former size. The traction produced by this on the dislocated limb is sufficient to bring the wandering bone to its socket.

The method of reducing a dislocated shoulder is quite as curious and interesting. It is managed thus; the hand of the dislocated limb is firmly fixed as close to the opposite shoulder as it can well be, by cords tied round the waist; between the bend of the elbow and the chest is placed an empty "masak" (a goat-skin water bag, in common use throughout Oriental countries as a means of carrying water), which is gradually filled with water: the weight of this suffices to overcome the resistance of the muscles before they have borne it a quarter of an hour, and the head of the bone flies back to the socket with its usual sound. Most masaks, when full, weigh close upon a hundred weight, and many much more than this.

For a reduction of dislocation of the ankle joint, the injured extremity is placed in a hole dug in the ground and covered over with a soft earth, which is firmly pressed down by stamping. The limb is then pulled out by force, with the joint returning to its natural position.

VEGETATION ON THE AMAZON.—The magical beauty of tropical vegetation reveals itself in all its glory to the traveller who steers his boat through the solitude of these aquatic mazes. Here the forest forms a canopy over his head; there it opens, allowing the sunshine to disclose the secrets of the wilderness; while on either side the eye penetrates through beautiful vistas into the depths of the woods. Sometimes on a higher spot of ground a clump of trees forms an island worthy an Eden. A chaos of bush ropes and creepers fling its gay flowers over the forest, and fills the air with the sweetest odor. Numerous birds, partly rivalling in beauty of colour, the passifloras and bignonias of these hanging gardens, animate the banks of the lagune, while gaudy macaws perch on the loftiest trees; and, as if to remind one that death is not banished from this scene of Paradise, a dark-robed vulture screeches through the woods, or an alligator rests like a black log of wood, or a sombre rock, on the tranquil waters. Well he knows that food will not be wanting; for river tortoises and large fish are fond of retiring to these legunes. * * * If the Nile—so remarkable for its historical recollections, which carry us far back into the bygone ages—and the Thames, unparalleled by the greatness of commerce which far eclipses that of ancient Carthage and Tyre—may justly be called the rivers of the past and the present, the Amazon has equal claims to be called the stream of the future; for a more splendid field nowhere lies open to the enterprise of man.—*Tropical World.*

Editorial Notices, &c.

THE BRITISH AMERICAN, August, 1863. Toronto; Rollo & Adam, King Street.

This well conducted monthly, devoted to literature, science and art, has attained to its fourth number, and evinces a steady progress, fully sustaining the high anticipations formed of it at the commencement. The present number contains an elaborate article from the editor, Professor Hind, on the Cultivation and Manufacture of Flax and Hemp in Canada. We had intended to present our readers with some extracts from this valuable paper, but it should be read as a whole, and we trust that most of our enterprising farmers and manufacturers will peruse it in the Magazine itself. The Hon. Mr. McGee's paper, entitled A Plea for British American Nationality, is well worth a thoughtful perusal at the present time, so pregnant with great events both in the old world and the new. There are several other original articles belonging to a lighter literature, that will prove very generally interesting. The present number contains several able reviews of important works recently published, among them Baron Liebig's Laws of Husbandry, giving us the matured views of that eminent philosopher on a subject of such vital interest to our readers as agriculture. A vast amount of useful and interesting information is given in the department of periodical literature; in which the reader will find discriminating notices of the leading Magazines and Reviews, both British and American. This native production is deserving, as we are glad to be informed it is steadily obtaining, general support throughout the British Provinces. Price \$3 per annum.

EDINBURGH REVIEW; July, 1863. Leonard Scott & Co, 38 Walker Street. New York.

The contents of this number of the *Edinburgh*, the oldest of the British Quarterlies, are more than usually varied and interesting. Napier's Memorials of Claverhouse; Druids and Bards; Fergusson's History of the Modern Styles of Architecture; Louis Blanc's French Revolution; Sir George Cornwall Lewis on Forms of Government; Xavier Raymond on the Navies of France and England; The Sources of the Nile; The Scots in France;—the French in Scotland; and Lyall on the Antiquity of War.

BLACKWOODS' MAGAZINE for July, contains the continuation of Caxtoniana; From Cracow to Moscow; Ireland Revisited; Why has not Italy done more?; The London Art Season; Pen and Ink Photographs from Berlin; The Perpetual Curate; and the State and Prospects of the Church of England.

These numbers of the Edinburgh and Blackwood, commence new volumes of the celebrated and long established periodicals, and the present is therefore a convenient time to commence subscribing. The Messrs. Scott & Co., also reprint the three other leading British Quarterlies; viz. The London Quarterly Review; The North British, and the Westminster, comprising the cream of British science and literature, and all shades of politics. The advantage of clubbing will be seen from the following table of rates:—

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We observe that the Messrs. Scott & Co., have just brought out a new edition of THE FARMER'S GUIDE, being a reprint of Stevens's well known Book of the Farm, with the appendix adapting it to the wants of farmers on this side of the Atlantic by the late Professor Norton of Yale College. This is universally acknowledged as the most complete work on scientific and practical agriculture in the English language. The American edition consists of 2 handsome Royal octavo vols. of 1600 pages and numerous well executed engravings. Price \$6: being but a little more than a third of the original work in England. No farmer with any desire for improvement ought to be without it.

THE HORTICULTURIST AND JOURNAL OF RURAL ART AND TASTE.

The August numbers of this old and valuable serial is to hand, and is replete, as usual, with articles of first rate merit on the various branches of the beautiful art of Horticulture. The wood cuts are excellent illustrations of the matter treated of in the text. Published monthly by the Editors, Mead & Woodward, 37 Park Row, New York, at \$2,00 per annum.

THE GARDENER'S MONTHLY for August. W. G. P. Brinkloe, 23 North Sixth Street, Philadelphia; and C. M. Saxton, 25 Park Row, New York.

This periodical has entered its fifth year, and has maintained throughout its career a steady progress and improvement. It is edited by Mr. Thos. Meehan, a well-known practical horticulturist. Its pages are always filled with matter of practical value to all owners of gardens, whether large or small. Terms \$1 50 per annum.

THE CANADIAN ILLUSTRATED NEWS, a weekly paper, published at Hamilton, C. W., at \$3.00 per annum.

We had some misgiving when this paper first started of its success. Knowing the difficulties and expense of commencing and sustaining the publication of a respectably illustrated sheet in a new country, we are most agreeably disappointed in finding the *Canadian Illustrated* not only continued but vastly improved, both in a literary and artistic point of view. The engravings on the whole are decidedly good; many of them would be creditable to similar publications in older and wealthier countries. We trust that the enterprising publishers will meet with a sufficient encouragement to preserve and improve. This they can only do by the aid of a large number of subscribers, who, we are informed, are steadily increasing. It is a most suitable paper for Canadians to send to their friends in Europe. The racy pen of its principal editor, Alexander Somerville, well known in Britain during the anti corn law controversy, as "one who had whistled at the plough," is distinctly tangible in most of its leading articles.

THE SCIENTIFIC AMERICAN, a weekly journal of Practical information in Art, Science, Mechanics, Chemistry and Manufactures, \$3.00 per annum, Meehan & Co, 37 Park Row, New York.

This old established paper continues to occupy the foremost rank on this continent as a popular and practical instructor in the application of the principles of science to the various arts and purposes of life. While it is indispensable to that numerous class who are commercially engaged in mechanical and man-

ufacturing pursuits, much will be found in its pages suited to the taste and wants of farmers, and in fact, to all that are actuated by the laudable desire of obtaining useful knowledge. The illustrations are numerous, made from correct drawings, and executed in the highest style of the art.

CALIFORNIA WINE, WOOL & STOCK JOURNAL.

We have received the July number of this new monthly, which is got up in the best style; its external appearance is quite attractive and its internal contents not less so. Judging from this number, and the *California Farmer*, with which our table has been regularly furnished for some time, that extensive region once distinguished for its gold and afterwards for its flocks and herds, is now to be admirably suited to the culture of the grape and the manufacture of wine. In Agriculture also it is found to possess innumerable capabilities. We will again refer to these matters more at length.

AGRICULTURAL REPORT FOR THE PROVINCE OF NOVA SCOTIA, Halifax, N. S., 1863.

We have been favoured with a copy of Dr. Forrester's interesting Report, but must defer any notice of its contents till our next.

THE PROVINCIAL EXHIBITION.—We wish to correct an omission which occurred in the printing of the Prize List and Rules and Regulations for the Provincial Exhibition, and which it is now too late to remedy in the proper place. In the list of the Local Committee, on the second page of the pamphlet, the names of Mr. Sheriff Corbett and Dr. Litchfield were inadvertently omitted. These gentlemen have both been members of the Local Committee from its formation, Dr. Litchfield being Corresponding Secretary.

BLOOD STALLION FOR SALE.

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TORONTO MARKET PRICES.

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Potatos, per bushel.....	35 " 40
Apples.....	1 25 " 2 00
Fresh Butter, per lb.,.....	18 " 20
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Calves, each,	4 00 " 6 00
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Lambs, each.....	2 00 " 3 00
Beef, per 100 lbs.....	3 00 " 5 00
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R. L. DENISON,
Dover Court.

Aug. 20th, 1863.

Coe's Super-Phosphate of Lime
FOR WHEAT.THE following testimony is from an extensive
Wheat-grower, and the best of authority :{ Near Frederick, Frederick Co., Md.,
January 2, 1863.

DEAR SIR,—I have used Coe's Super-phosphate of Lime for several years past with uniform success, and last season it proved particularly satisfactory. Ten acres of land which was of more than an ordinary poor quality was treated in the following manner:—On one half the piece I used Coe's Super-phosphate, at the rate of 200 lbs. to the acre; on the other half Peruvian Guano at the same rate, and sowed with wheat. On the five acres on which I used Phosphate, I had at least twenty-five per cent. more wheat, and the berry was much larger and of nicer quality than where the Guano was used, and also the straw was much the heaviest where the Phosphate was used. I have used Coe's Phosphate in different ways, and on different crops, and the results have been highly satisfactory.

Very truly yours,
JOHN H. DETRICK.THOROUGH-BRED SHORT HORN
FOR SALE.MORETON DUKE, got by Mr. Stone's Bull
3rd Grand Duke, 2292, calved 9th June,
1860.William of Oxford, got by Mr. Stone's Bull
12th Duke of Oxford, calved 19th November
1859.David, got by Sir Charles, a son of 3rd Grand
Duke, calved 1st March 1861.Marquis of Oxford, got by William of Oxford,
calved 20th March 1863.Warwick, got by Moreton Duke, calved 26th
March 1863.

Terms very reasonable.

W. WILLCOCKS BALDWIN.

Larchmere, Oak Ridges.

April, 1863.

tf.

THOROUGH BRED STOCK.

THREE yearling Durham Bull two Galloway
Bull Calves, two imported Ayshire Bulls,
yearlings, for sale.

GEORGE MILLER,

Markham.

April, 1863.

tf.

THE CANADIAN AGRICULTURIST

AND JOURNAL OF THE

BOARD OF AGRICULTURE

OF UPPER CANADA.

THIS LONG ESTABLISHED PERIODICAL
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Toronto, June, 1863. }

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COR. OF YONGE AND QUEEN STREETS,

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FIELD AND GARDEN SEEDS,

of the best quality; and in connection with their

Wholesale & Retail Seed Business,

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AGRICULTURAL IMPLEMENTS, HORTICULTURAL TOOLS, and USEFUL BOOKS for FARMERS and GARDENERS.

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TORONTO, Dec. 16th, 1862.

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JAMES FLEMING & Co.

TORONTO, Dec. 16th, 1862.

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THE PROVINCIAL EXHIBITION

OF THE

AGRICULTURAL ASSOCIATION
OF UPPER CANADA,

Will be held at Kingston,

On the 21st to 25th September next.

PERSONS INTENDING TO EXHIBIT will please take notice that the entries of articles in the respective classes must be made with the Secretary, at Toronto, on or before the undermentioned dates, viz.,

Horses, Cattle, Sheep, Swine, Poultry, on or before Saturday, August 15th.

Grain, Field Roots, and other Farm Products, Agricultural implements, Machinery, and Manufactures generally, Saturday, August 29th.

Horticultural Products, Ladies' Work, the Fine Arts, &c., Saturday, September 12th.

Prize Lists and Blank Forms for making the entries upon, can be obtained of the Secretaries of all Agricultural Societies and Mechanics' Institutes throughout the Province.

HUGH C. THOMSON,
Sec'y Board of Agriculture.

Toronto, July 28, 1863.

[POST FREE.]

THE
Canadian Agriculturist
AND
JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV.

TORONTO, OCTOBER, 1863.

No. 10.

WAR AGAINST THE THISTLES.

We perceive that a Bill has been introduced by Mr. Stirton into Parliament to prevent the spread of Canada Thistles in Upper Canada, and all true friends of Agriculture must ardently desire to see it speedily become law. Why the Bill should be confined to Upper Canada we are at a loss to conceive, seeing that the Eastern section of the Province is upon the whole more infected with this pernicious weed than the western. A similar law has recently been passed in Pennsylvania, and from recent old country papers we learn that the same complaint is made in various districts of the United Kingdom. The truth is the permitting of thistles and other kinds of weeds among cultivated crops is, perhaps, the greatest of all obstacles to the advancement and profitableness of agricultural pursuits in all parts of the world; and therefore we hail every attempt, whether by the Legislature or otherwise, to prevent, or at least to mitigate, this wide-spread and destructive nuisance. Mr. Stirton's Bill might, perhaps, have been made a little more stringent, and have included all other weeds, the seeds of which are disseminated by the winds. Objections may possibly be raised by a few narrow-minded thinkers, or such as do not think at all, to interference with what they call private rights and privileges; but the question is not, unfortunately, one of mere private or individual concern, inasmuch as it affects the interests of a whole neighborhood. It appears just as right and reasonable that one neighbour should be

allowed to throw his cattle into the fields of another, as to injure the crops of those fields by permitting thistles to grow and ripen; and thus, by the agency of the wind, sow broadcast over them the seed. One would imagine that the good sense and obvious interest of farmers would be sufficient to induce them to use every available means of preventing the spread of such an evil, without legislative interference; but experience unfortunately shows that such is not the case. Let the friends of clean cultivation therefore persevere, and remember that however good a law they may obtain to mitigate or prevent the growth of destructive weeds, *everything will depend upon it's being fully and impartially carried into execution.* The evil is of such a nature that it must be grappled with everywhere, and by everybody. If only one or two farmers in a township, or even a county, allow thistles to ripen, it will take but a very few years before the whole country becomes infected, and consequently the expense of culture increased, and the crops diminished.

The Bill in question imposes a fine on any person who shall knowingly vend any grass or other seed among which there is any seed of the Canada thistle. It would be well if the spirit of this clause could be carried out with reference to the seeds of weeds generally. Too little care, by far, is exercised either by buyer or seller, as to the purity of agricultural seeds generally. Although grain of late years has been cleaned for market than formerly, still one too frequently observes wheat, barley, &c., so mixed

and foul as not only to be wholly unfit for seed, but very seriously deteriorated for commercial purposes. If farmers would exercise proper care, not only in selecting the most suitable varieties of grain for their soil, situation, &c., but also take sufficient pains to clean thoroughly the seed and the land in which it is to be sown, the expense of cultivation would be speedily reduced, and the amount of produce augmented to a degree at present inconceivable. A prevalent and fatal error arises from the foolish desire to buy *cheap* seeds, which are necessarily of inferior quality, and often very much intermixed, and which, in their results, will be found *dear at a gift*.

THE PROVINCIAL EXHIBITION, 1863.

Reported for the Agriculturist.

The Eighteenth Annual Exhibition of the Agricultural Association for Upper Canada was opened at the city of Kingston on Tuesday, the 22nd of September, on the grounds formerly occupied by the Association. The grounds are extensive and well laid out, and the buildings, for size and accommodation, are equal to any in the Province. The cattle sheds also are commodious and well arranged, and the pens for sheep are the best that have ever been provided, the substitution of neat little doors for bars in front being a decided improvement.

The arrangements about the judges were the same as usual, but, on their meeting to enter upon their duties on Tuesday morning, there was, if anything, more than the usual delay in getting to work, for, as the steamers were fully taken up by the conveyance of troops to and from Toronto, all the articles for exhibition had to be forwarded by the Grand Trunk, which not only caused confusion and delay, but also, it is reported, prevented many things from being sent forward at all. It so happened, therefore, from this, as well as from other causes, that though the number of entries was sufficiently large, there were many vacant stalls and empty tables, and in no department was there anything like the show, as far as quantity goes, that was witnessed at the two previous exhibitions. It cannot be denied that this was partly owing to the locality where it was held, there not being there the same wide extent of good farming country that there is in the Western peninsula, and many of our best breeders in the West not

caring to undertake the trouble, or to bear the expense and the risk, of conveying their stock for so great a distance. This must not however, be understood to convey the idea either of any reflection upon the farmers in central Canada, or upon the quality of the articles exhibited. Among the exhibitors from about Kingston, we notice several new names, and one or two who have shown great spirit both in breeding and importing; and as to the show generally, especially of live stock, though the number of animals was small, the quality was proportionately better, for, of course, none but the best were brought forward. Another remark it is but fair to make, and that is that through all the country, from Cobourg eastward, the summer was so remarkably dry that it was difficult to obtain even pasture for the cattle. The consequence was that not only were there few animals in condition for show, but, from the failure of the crops, a depression prevailed among the farmers which had a most injurious effect upon the Exhibition, by preventing many from taking that interest in it which they would otherwise have done.

The weather at the opening of the Exhibition was all that could be desired. A shower on the previous day had put the ground in nice order, and, at first, everything promised extremely well. Unfortunately, however, on Wednesday evening the weather broke up. Rain set in with extreme cold and high winds, and the consequence was a woful falling off in the number of visitors, and a corresponding diminution in the amount of the receipts.

Entering now upon a more detailed review of the principal articles of exhibition in the Agricultural department, we will commence with the noblest of all domesticated animals:

HORSES.

In the show of blood stallions we had this year the finest in what has generally been the worst feature in the exhibition. It is true the number exhibited, being only five, was not very great, but so excellent were they and so even in quality, that the judges had some difficulty in coming to a conclusion. Of the five not less than four were recent importations, two from the old country, and two from Kentucky. The former were "The Teste," just arrived from England, the property of Chas. Douglas, Esq., of Oak Ridge, county of York, and "Birdcatcher," imported by Mr. Simon Beattie, of Markham, just before the last exhibition, at which he was shown, but in such

wretched condition, after a long voyage in a sailing vessel, as to attract but little notice. The Kentucky horses were "Wagram," a very large and fine animal, owned in Montreal, where he took the first prize at the exhibition held there this year, and "Kennet," owned by E. Arkland, Esq., of Oshawa. The fifth was "Sir Tatton," bred in the Province, got by a well known stallion of the same name, a perfect little horse, with beautiful action, and wanting only in size to enable him to compete with anything upon the ground. The judges, however, very properly made size a very important condition, the want of it having hitherto had a very bad effect upon our blood-stock. For the first prize "The Tester" was selected, his size, points, and undoubted blood, placing him beyond competition, though in the opinion of many "Kennet" was not far behind. As the latest importation of English blood we give him pedigree, which shows him to be bred from the best stock now in England.

"The Tester" was got by Melbourne, out of Pickledust, by Lancelot, grand-dam Peri [dam of Sir Hercules] by Wanderer, Thalesris by Alexander Riva, by Sir Peter, Hermet, Manilla, Goldfinder, Old England Mare, Godolphin, Little Hartley Mare, Bartlett's Childers, Flying Whig, Woodstock Arab, St. Victor Barb, Whynot Mare, Crab, Fox, Bay Bolton, Newcastle Turk, Byely Turk. Melbourne is sire of Rockingham, winner of St. Leger; West Australian, winner of both Derby and St. Leger; Blink Bonny winner of the Oaks and Derby; Sir Tatton Sykes, winner of the 2,000 guineas, and St. Leger; Cymba, winner of the Oaks; Thormanby, winner of the Derby, &c."

On the same grounds the second prize was awarded to "Kennet" and the third to "Bird-catcher." Then came one or two entries of blood mares and fillies, but not one of them appeared upon the ground.

Of agricultural horses there was a very good show, though we did not hear of any fresh stock. This class has in fact been brought to such a high standard that there is little room for improvement. The best horse in this class was one shown by Mr. Gowland of Seneca.

The animals generally shown in the next class, that of roadsters or carriage horses, have always been regarded as wanting in many of the qualities which go to make up a perfect horse of the kind, and no doubt a cross of the larger sized blood horses now in the country will be found of the greatest value in supplying the deficiency. Among those shown in

this class there was, however, one which challenged the almost unqualified admiration of all who saw him—a horse called Anglo-Saxon, the property of Mr. Armstrong of Yarmouth. He was certainly the finest animal shown in his class, and in the opinion of the judges the finest upon the ground, for to him was awarded the Prince of Wales' prize of £15, for the best horse of any age or breed. In this class there were a great many entries of carriage and saddle horses, some of which were really very good, and, shown in harness, formed a very attractive feature, though the trotting sulkeys to which many of them were attached gave to the ground rather too much the appearance of a race-course to be in strict keeping with our ideas of an agricultural exhibition.

In the class of heavy draughts there were some excellent horses shown, the first prize for stallions being awarded to Mr. Robert Farries of Whitby. The pure Cludes seem to be rather going out of fashion, their place being taken by a horse of equal power, but of less weight and more activity. A two year old filly of this class, shown by Mr. James Logan of Montreal, was one of the finest animals upon the ground.

CATTLE.

We have already remarked upon the general nature of this part of the exhibition that while the number exhibited was small, the quality was good. This observation applies equally to all breeds and classes. The Durhams were of course the most popular, but the splendid herds shown at Toronto and Hamilton were sadly missed, and from their absence the casual observer, or one not previously aware of the quantity of good stock in the country, would of course not gain the idea that our progress in this respect has been in reality anything like what it has. Stone, of Guelp, Miller, of Pickering, and Snell of Chinguacousy, had it all pretty much their own way among the Shorthorns, though some few prizes were taken by those who may be classed among the outsiders. In fact, we do not hear that during the past year or two any fresh competitors of note have entered into the lists. There was, therefore, but little requiring special comment, and in fact those who know what Upper Canada really can show must have felt somewhat disappointed.

The Herefords Mr. Stone had all to himself. Besides his there was not a single animal of the breed on the ground. His herd, however,

may well defy competition, for more perfect animals it would be hard to find. Our farmers can hardly be aware of the many valuable qualities of this breed, and their adaptability to many localities, or they would not allow so many prizes to remain in the Treasurer's hands, or to go by default from want of competition.

Up on no class did the locality of the show have more injurious effect than upon that of the Devons, for it so happened that, with a few exceptions, the principal breeders are in the London District, from which not a single animal was sent. The display was therefore confined to the herds of a few spirited breeders east of Toronto, of whom the most successful was Mr. Courtice of Darlington, whose stock are equal to those of any in the country.

In respect of locality Ayshires fared better than any other breed, for they hold much the same place in the east that Devons do in the west, and at Kingston they made a very fair show. Mr. Wright, of Cobourg, continues to be the principal exhibitor in this class, but he had strong competition from Lower Canada, where there are some excellent animals, the purest perhaps in the country, amongst which those of Mr. Logan, of Montreal, may be specially mentioned. Among other successful breeders in this class may be mentioned the names of Miller and Beattie of Markham, Morton of Morton, Wheler of Scarboro, and Nimmo of Camden East.

Galloways, though not numerous, were fairly represented, Messrs. Snell, Nimmo, and George Miller being the principal exhibitors. The former breeder has gone extensively into the business, and this year took the largest share of prizes. Several of those who are usually competitors in this class did not appear at all.

Of grades and working cattle there were but few entries, and those that were shown presented nothing worthy of special notice. The Fergus Cup was awarded to W. Miller, of Pickering.

SHEEP.

The show of sheep was the best of any in the Agricultural department. The Long Woolled varieties are very numerous, and among the exhibitors in this class we find a competitor nearly unknown to Provincial fame, Mr. George Jackson, of the Gore of Toronto, whose entries are very numerous, and whose name figures largely in the prize list. Of Leicesters Messrs. Snell and John and George Miller were the chief exhibitors, but the competition of the Cotswold and other long wool-

ed varieties has placed this variety rather in the back ground.

Cotswolds were, as usual, the most numerous, and here we may remark something worthy of notice, that in this breed, as well as in other long-woolled varieties, Mr. Snell, now one of our most extensive breeders, who has never imported himself, is able to compete successfully with those who are frequently doing so. This fact proves that it is now possible to obtain in the country the material for a flock without going to the risk and expense of fresh importation, whenever it is necessary to change the breed. The chief exhibitors in this class were Messrs. Stone, Snell, and G. Miller. The class of Long-woolled, exclusive of Leicesters and Cotswolds, comprises a great variety of cross bred sheep, besides some breeds not in the prize list, such as the Lincoln, &c., but however useful such classes may be in bringing in new varieties they certainly tend to produce a certain degree of confusion amongst different breeds. In this class we again find the name of Mr. Snell as one of the principal exhibitors, along with J. and G. Miller, Jackson, and others.

The show of Medium-woolled was not large, but there were some excellent Southdowns from the flocks of Messrs. Stone, Spencer of Whitby, Bethel of Grantham, and Vine of St. Catharines. Mr. Stone's late importations placed him at once in the van of Southdown breeders; this sheep for neatness and symmetry cannot be surpassed, and they have already largely enriched the flocks of other breeders.

Cheviots seem to be somewhat on the increase, being a hardy breed, with good quality of wool and fair size, and therefore well adapted to many parts of the country. The principal breeder is D. Elliott, of Grafton, but T. Guy of Oshawa, and G. Miller, also exhibited some well bred animals.

In the next class, that of Medium-woolled, not Cheviots or Southdowns, there was some strong competition between Spencer's Hampshire Downs, and G. Miller's lately imported Shropshire Downs, and the prizes were pretty evenly divided between them. The Shropshire Downs are a splendid breed, in size equal to the Leicester, more compact than the Hampshire Down, and with wool of the lustrous kind now so much in demand.

Merinos and Saxons were not largely represented, and all the prizes were divided between Messrs. Young and Rymal of Hamilton and Arkland of Oshawa.

PIGS.

The display of pigs was very good, both of large and small breeds, a large contribution being made by Mr. Logan of Montreal. Of the large breeds there were some excellent Yorkshires shown by C. A. Jordison of Sidney, a well-known breeder, James Logan, and J. P. Wheeler of Scarborough. Of large Berkshires, G. R. Morton of Morton, and A. McMillan of the township of Kingston, were the principal exhibitors. Besides these there were some very fine large pigs shown by T. Cavanagh of Watertown, A. C. Clark of Henderson, and by G. Miller of Markham, of a breed called, we think, the Cumberland, which he introduced a few years ago. A few Suffolks of good quality were shown by James Main of Trafalgar, Logan of Montreal, and Geale of Kingston, and some improved Berkshires by G. R. Morton and Col. Thomson. There were some other varieties of small breeds shown, and amongst them a couple of very neat compact little porkers, sent out by the Prince of Wales from the stock bred by his lamented father the late Prince Consort.

ROOTS, GRAINS, &c.

Of the display of field roots and vegetables the less said the better. It was inferior to what any county in Upper Canada ought to be able to produce. There were of course some good specimens, but they were very few, and most of the articles should have been kept at home. They did not fill a quarter of the space allotted to them, and on the second day of the Exhibition were removed to the main building, where they helped to make up the deficiencies there.

The entries of grain were far less than usual, but what was shown was of good quality, and up to the usual standard. We did not, however, notice anything in the class worthy of special observation.

FRUIT AND FLOWERS.

The show of fruit was also very inferior, and, but for the magnificent collection of Mr. Beadle of St. Catharines, would hardly have been worth notice. The Flowers did not show to advantage, as those from a distance had evidently been a good deal damaged by carriage. In fact it is from this cause almost impossible to get a really good show of flowers at our Provincial Exhibitions. M. Flanigan of Kingston, Prof. Hirschfelder and Jas. Fleming of Toronto, R. Curry of Brockville, B. Lossee of Cobourg, were the principal exhibitors.

FLAX.

The introduction of the great staples of Flax and Hemp into the prize list of the Association marks a new era in our agricultural progress. The results of the experiment seem to prove conclusively that we need no longer be entirely dependent upon wheat as the mainstay of our commerce, that in flax we have a production for which there is a certain market, which can be grown with profit, and which is not liable to any of those scourges which, combined with bad husbandry, have rendered the wheat crop so precarious a basis for our farming operations. To show the extent to which the cultivation of this article has already reached, it is calculated that during the last season there were ten thousand acres in Upper and Lower Canada planted with it. The Messrs. Lyman of Montreal, who are large manufacturers of oil and cake, were able to purchase thirty thousand bushels of Canadian seed, and the coming season they hope to be able to purchase double the quantity. This at seven and sixpence per bushel would represent nearly twenty five thousand pounds, or ninety thousand dollars, which otherwise would be expended in enriching the flax growers of some foreign country. To give an idea of the profits of flax growing we quote the following figures, for which we are indebted to Mr. Donaldson, late government emigration agent in Ireland, and to whom we are mainly indebted for the introduction of this valuable crop. The average quantity of scutched flax which an acre will produce is from four to five hundred weight, worth from three to four pounds per hundred in this country. Taking the lowest figures, this makes the produce per acre worth twelve pounds. Deduct from this seven and sixpence per hundred weight for scutching, which will give you a net return of ten pounds ten shillings per acre, or forty-two dollars, the expense of cultivation not being greater than that of any other crop. This is exclusive of the value of the seed. Set this against the average return of wheat at present prices and with the best possible cultivation, and the result will clearly be in favour of the flax. Of course we do not urge the cultivation of flax as a substitute for wheat, but as an additional crop on which the farmer may rely to bring him in a certain sum of money, and thus save him from being, as heretofore, altogether dependent upon one crop liable to so many disasters.

There were this year at the Exhibition five exhibitors of flax and seven entries, against

three last year. The samples shown had all been scutched in the mills brought out by government, and were declared by competent judges to be sufficiently good to enter into any market in the world. To show the farmers what could be produced by care and cultivation, Mr. Donaldson had samples of flax from Ire and, Belgium, and France, of various qualities, that from Courtrai in France being worth *one hundred and seventy Pounds, sterling, per ton*, or more than double what ours would be. Of hemp there were two samples shown, both of which were of immense length, and appeared to be of fine quality, but of them we cannot give the same particulars that we have of the flax.

AGRICULTURAL IMPLEMENTS.

The show of these articles was very fair, though we missed the agricultural engines so numerous exhibited on previous occasions. There was a large variety of mowing and reaping machines from the factories of the Pattersons of Belleville, and Hall of Oshawa, but as none of them were tested it was impossible for a mere observer to form any idea of their respective merits. There were two or three threshing machines of the usual pattern, a couple of stump machines of a novel construction, a large variety of grain and turnip drills, chaff cutters, cultivators, horse hoes, single and double mould-board ploughs of wood and iron. In addition to these, few of which presented any new features, there was one machine deserving of special attention. This was Chase's American tile ditcher, invented and patented by J. Chase, and now manufactured by him at the works of Messrs. Hall of Oshawa; without a drawing it would be difficult to describe it correctly, but it consists of an oblong frame of wood resting on four broad wheels, with a pole for two horses attached to the front. A long narrow iron box terminating in a steel spade is hung from the centre of the upper part of the rear end of the frame, so as nearly to touch the ground in front, where it is kept in its place by a strong piece of iron work passing up through the frame, by which the spade is raised or lowered at pleasure. Along the bottom of the box an endless chain with buckets passes, going over a pulley at the hinder end. When the machine is to be set at work a pair of horses are attached in the usual way to the pole, the spade is let into the ground to a greater or lesser depth according to the nature of the soil, the earth is scooped up by it to the proper width of the drain, and

carried by the chain of buckets which the wheels set in motion over the pulley at the back, and falling into a slanting spout deposited at the side of the drain. One cut having thus been made of the required distance, the machine is turned round and travels back, this time depositing the soil on the opposite side, and so on, by successive acts, till the necessary depth has been gained. When the drain has thus been dug the excavator is taken off and another long box with a curve at the lower end which is let down to the bottom of the drain put in its place. The tiles are put in this box one on top of another, the machine set in motion, the tiles forced out of the box or tube by their own weight, are neatly laid along the drain with the ends closely pressed together, and as each tile is thus laid a little earth is, by an ingenious contrivance, thrown upon it, thus securing it in its place. We were assured that the machine had been tested and was found to work well, and no doubt if it answers the expectations formed of it, it will be found of great value. It is said that by this machine, with a man and a pair of horses, one hundred rods of drain can be cut and laid in a day in any ordinary soil.

One drain tile machine of a simple and apparently effective construction was exhibited by Lindsay of Newcastle.

The ploughs, of which there was hardly the usual variety, were tried in a field adjoining the show ground, but it must be observed that the soil was so dry and hard that the draft was much greater than it would have been under more favourable circumstances, while the quality of the work was equally affected. The following is the draft of the prize ploughs of wood and iron, which were tested separately, the depth of the furrow being six inches, with a width of nine inches:—

IRON PLOUGHS.

William Mahaffey, Brampton,	draft 425lbs.
James Jeffrey, Petite Cote, (L.C.)	" 503 "
George Morley, Thorold,	" 520 "

WOODEN PLOUGHS.

George Morley, Thorold,	draft 570lbs.
T. Modeland, Brampton,	" 581 "
Wm. Mahaffey, "	" 600 "

Besides the articles above enumerated, there were a number of smaller ones, such as churns, scythes, snaths, &c., all displaying more or less ingenuity, but the qualities of which could only be proved by practical trial. The varieties of churns now made are endless,

but all a mere modification of some principle long in use. And after all it is questionable how far the so-called improvements are really effective, for we have frequently seen those which theoretically seemed unimpeachable, utterly fail when brought into practice. A scythe the snath of novel construction, made by E. Roblin of Sophiasburg, is worthy of notice. It was curved so as to form with the blade a complete segment of a circle. The maker alleges that it gave a much wiler as well as cleaner cut with less labour than the ordinary scythe, and in proof of that he produced a testimonial signed by a number of farmers by whom it had been tried.

The want of shelter for the larger class of implements was much felt when the rains set in on the last days of the exhibition, for not only did it prevent them from being examined by any but very enthusiastic agriculturists, but was productive of much injury to those that were highly finished.

Besides that portion of the exhibition peculiarly agricultural, there was in the main building a large and varied assortment of manufactured articles of more or less importance, and all proving that every year the Province is advancing as a manufacturing country. Into this part of the show it is not our province to enter, and we need only remark that while, like the rest, the number of articles shown was comparatively small, they were generally of excellent quality, and proved the existence of great proficiency in many important branches of trade.

Owing to the bad weather the close of the exhibition was rather tamé, and the articles were removed with more than the usual haste to be off homewards.

On Friday Morning the annual meeting of delegates took place. The code of bye-laws already published in the *Agriculturist* was adopted without amendment. The election of officers then took place. Mr. Johnson, the First Vice President was elected President, his place being, in the usual rotation, filled by Mr. Rykert, the Second Vice. For the office of Second Vice President several persons were named, the principal being Col. Saunders of Guelph, and Mr. McGillivray of Glenora. After a sharp but good-humoured contest the latter was elected by a small majority.

The question of the next place of meeting was then brought up. A long discussion took place as to the expediency of confining the ex-

hibitions as heretofore to Kingston, Toronto, Hamilton, and London, and claims were put in by the towns of Guelph and Belleville, each of which made liberal offers. The question was ably debated on both sides, but finally the present system was sustained, and the claims of Hamilton established by a considerable majority.

At two o'clock the retiring President delivered a brief but able address, and thus closed the Exhibition of 1863.

THE ANNUAL MEETING.

The Annual Meeting of the Directors of the Agricultural Association took place on Friday, 25th September, at 10 a.m., in the Committee Room on the Show Grounds. The following directors being present:

MEMBERS OF THE BOARD OF AGRICULTURE:

Messrs. E. W. Thomson, H. Rutten, Hon. Asa Burnham, Hon. D. Christie, R. L. Denison, Dr. Richmond, Professor Buckland.

MEMBERS OF THE BOARD OF ARTS AND MANUFACTURES:

Dr. Beatty, Messrs. S. Sharp, T. McIlwraith, A. McCallum, Thomas Hutton, H. M. Melville, W. Mihael, T. B. Harris, T. J. Rastick, T. Sheldrick, E. A. McNaughton.

DELEGATES FROM AGRICULTURAL SOCIETIES.

Addington,—M. Lake, John Sharp.
 Brant West,—Daniel Perley, Chas. Chapin.
 Brockville,—J. W. Hough.
 Dundas (Co)—I. N. Rose.
 Durham East,—Nathan Choate,
 Elgin East,—James Armstrong.
 Elgin West,—H. D. Smith.
 Frontenac,—James Da'ry, E. J. Barker.
 Glengarry,—N. J. McGillivray, D. Campbell.
 Grenville South,—James Keeler.
 Halton,—Joseph Kirby.
 Hamilton,—Peter Grant, Wm. Hendrie.
 Hastings North,—James Archibald, M. Kerr.
 Hastings South,—George Taylor, S. D. Farley.
 Huron,—George Girvin, Thos. Anderson.
 Kent,—David Wilson.
 Kingston,—M. Flanigan, W. B. Simpson.
 Lanark North,—John Menzies, Jno. Baird.
 Lanark South,—W. O. Buell, John Hart.
 Lennox,—Wm. Gibbard, O. T. Pruyne.
 Lincoln,—J. C. Rykert, Eli Gregory.
 Middlesex East,—Alexander Kerr.

Middlesex West,—Allen Bogue, James Craig.

Niagara,—S. J. J. Brown, G. J. Miller.

Norfolk,—William McMichael, Roger Chrysler.

Northumberland East,—W. Humphris.

Northumberland West,—Chas. Bowen.

Ontario North,—Robert Spears.

Ontario South,—John Shier, J. H. Perry.

Peel,—John Tilt, R. A. Hartley.

Perth,—Joseph Salkeld.

Prince Edward,—W. N. Bedell, Robert Wer'en.

Russell,—Ira Morgan.

Simcoe North,—W. E. O'Brien.

To onto,—J. D. Humphreys.

Welland,—Edward Jones.

Wellington South,—Robt. Lingwood, Matthew Anderson.

Wellington South,—Arthur Hogge, Wm. Benham.

Wentworth North,—Thomas Stock,

Wentworth South,—Jacob Rymal, Alex.

Young.

York North,—Francis Smith.

York West,—E. C. Fisher.

DELEGATES FROM HORTICULTURAL SOCIETIES:

Hamilton,—John A. Bruce.

Hon. Asa A. Burnham, President of the Association, in the Chair.

Mr. Hugh C. Thomson, Secretary to the Board of Agriculture, Secretary.

Col. Thomson moved the adoption of the code of by-laws laid over from last annual meeting. He said that they had been before the public for two years, and were thoroughly discussed at last meeting.

Mr. Rykert moved that the latter part of the seventh section of the by-law be expunged. It provided that the Exhibition should only be held in accordance with the provisions of "the rule adopted at the annual meeting of 1858." That rule said that the Fair should only be held at places where permanent buildings were erected.

Col. Thomson defended the rule.

Hon. Mr. Ruttan said if the words "permanent buildings" were expunged, the views of most gentlemen would be met. He urged the necessity of holding the meetings of the Association at more than two or three places.

Hon. D. Christie said Mr. Ruttan had stated properly that the Association had no right to pass by-laws in opposition to the statute law. But he had not shown that the resolution requiring permanent buildings was contrary to the Act. The law gave power to choose the place; the resolution said those places at which there were not suitable buildings should not be elected. He held that permanent buildings

were the only suitable buildings. Look at what had occurred at this Exhibition. How would the Association be able to pay its way in Kingston, for instance, if they had this year been required to spend a large sum of money on the buildings? The time might come when the Association would be able to go beyond the four places at which the Exhibition was held, but it could not be done now; it was not sufficiently wealthy.

Dr. Beatty concurred in the views of Mr. Christie.

Mr. Rykert said the resolution was contrary to public opinion. Contrary, at any rate, to the wishes of the agricultural population of Upper Canada. What good had been done by the permanent buildings to the Association? Where was the money that had been lent to the cities? They were complaining to-day that they were five or six thousand dollars out of pocket because the Exhibition was a poor one. What good had the Kingston permanent buildings done them?

Mr. O'Brien complained that the interests of the farmers were overlooked and hampered by the erection of "crystal palaces," which were not needed for the exhibition of agricultural products.

Mr. McNaughton contended that much material good was done by intercourse between the agricultural and manufacturing portion of the population.

The amendment was then put and lost by a large majority.

The original motion was carried.

Dr. Beatty moved that Mr. James Johnson, of East Middlesex, 1st Vice-President, be President of the Association for the coming year.

Hon Mr. Ruttan seconded the motion.

Carried.

Mr. McNaughton, seconded by Mr. G. J. Miller, moved that Mr. Rykert be 1st Vice-President.—Carried.

Mr. Stock, seconded by Mr. Perley, moved that Mr. Thomas Saunders, of Guilph, be 2nd Vice.

Mr. Campbell, seconded by Mr. Morgan, moved that Mr. Neil McGillivray, of Glengarry, be 2nd Vice.

The following gentlemen were also nominated:—

Mr. S. S. Wilmot, of West Durham.

Mr. Sidney Warner, of Frontenac.

Mr. J. P. Wheeler, of York.

Hon. James Skead, of Ottawa.

Hon. John Simpson, of Durham.

Mr. John Flanigan, of Frontenac.

The President called for a show of hands for each nominee, with the following result:

Mr. Saunders received 29 votes; Mr. McGillivray, 26; Mr. Warner, 21; Mr. Wilmot, 1; Mr. Wood, 20; Mr. Skead, 18; Mr. Flanigan, 22; Mr. J. P. Wheeler, 8; Hon. John Simpson, 10.

It was then decided that all the candidates

who had received under 20 votes should be dropped. The voting was then proceeded with.

Mr. Saunders received 36, Mr. McGillivray 35, Mr. Warner 15, Mr. Wood 10, and Mr. Flanigan 14 votes.

A division was then taken between Mr. Saunders and Mr. McGillivray.

Mr. Saunders received 37 votes, Mr. McGillivray got 40 votes, and was declared elected.

Colonel Denison was re-appointed Treasurer.

Mr. Farley moved that Belleville be the place of exhibition in 1864.

Mr. D. Perley, seconded by Mr. J. Rymal, moved that Hamilton be selected.

Mr. Gough, seconded by Mr. Tilt, moved that the town of Guelph be chosen.

Deputations from the places named were then admitted, in order that they might state the advantages held out by their several localities.

The deputation from Belleville was first called upon.

Mr. Wood, (Warden), spoke for the county. The Council was ready to assist the town, to enable it to erect proper buildings. They placed the claim of Belleville upon the fact that it was the centre of a large agricultural district, which had not yet had the honour of the Exhibition.

Mr. Brown, the Mayor of Belleville, said the town would join the county in guaranteeing to the Association any necessary erections. The town had guaranteed \$4,000, the county \$4,000, and a private subscription was being got up.

Mr. Sheriff Taylor said that the subscriptions in the town amounted to \$5,000.

Mr. McElroy (Mayor) spoke for Hamilton. He was authorized to make an offer of the buildings already existing. He had the authority of the commander-in-chief for saying that the troops would be removed when the "Palace" was wanted. Moreover, the railways had agreed to carry people and goods for one fare.

Mr. Rykert asked if Hamilton was prepared to repay the money she had borrowed from the Association.

Mr. McElroy did not know that Hamilton had borrowed any.

Colonel Thomson explained that the Crystal Palace Committee, being a Committee of the City Council of Hamilton, borrowed in 1860 \$2,000 to enable them to pay their workmen, under promise that it would be repaid in a fortnight. But the Association had not yet been able to recover the amount.

Mr. McElroy said there was no record of the case on the minutes of the Council. But if it were really true that the money had been borrowed, the citizens would be willing to repay it.

Mr. Peterson, Mayor of Guelph, spoke on behalf of that town. The Corporation was prepared to offer buildings sufficient for the Association; and the County Council had

voted \$4,000 upon the express understanding that those buildings should be permanent. He contended that the hotel accommodation was very good, and that there was plenty of it.

Mr. Elliott (Warden) spoke of the geographical position of Wellington, the centre of the large agricultural peninsula of Western Canada, with all sections of which it was connected by rail. The County Council had guaranteed \$4,000 to aid in erecting permanent buildings, and the reeves had held meetings in the townships, at which about \$8,000 more had been voted.

The vote was then taken. The motion in favor of Guelph was lost, as was also that for Belleville. Hamilton was carried by a majority of about two-thirds or three-fifths of the meeting.

The President stated that the amendment to the Agricultural Act was to be considered.

Hon. D. Christie suggested that as action was to be taken by the Government on the subject, it would be well, perhaps, if the Association would express an opinion on the Bill drafted at the meeting of delegates in Toronto, and which had been extensively published.

Mr. Stock, seconded by Mr. Tilt, moved that the Association record its opinion in favour of the said draft.

Carried.

The usual votes of thanks were then carried, and the meeting adjourned.

THE PRESIDENTS ADDRESS.

At two p. m. on Friday the 25th, the President of the Association the Hon. Asa Burnham, delivered the following Address from the principal Stand on the grounds:—

GENTLEMEN—It has been the usual custom at our annual meetings for the President of the Agricultural Association to read you an address before the meeting breaks up. In following up this rule I do not propose to make a lengthy one. After the able addresses which have been delivered from year to year, I shall only endeavor to make a few practical remarks. On occasions of this kind, it is encouraging to see so many studious and intelligent men gathered together from all parts of the Province to display their stock and agricultural and mechanical products, and thereby advancing the general interests of the country. When we meet at these periodical gatherings, we should endeavor to have a mutual exchange of ideas, which in many cases would prove highly beneficial to us all. It is only by practice, experience, and a close observance of what is going on around us, that we can ever expect to attain a high position in our different callings. When we look about and see the trials and difficulties in which

other countries are involved we have strong reasons to be thankful, and should not forget the debt of gratitude we owe to God for the peace and quietness which reign in our land, and for the bountiful harvest we have just gathered in. While we have reason to congratulate ourselves on the rapid strides which the farmers of Canada are making in the improvement of stock and in the cultivation of the soil, we should remember that there is still a wide field for improvement before us, and that every effort should be made to bring about a further improvement. We see in all the learned professions, as they are called, continued efforts are being made to advance them; and why should not farmers go and do likewise? The truth is, there is not that unity of action and mutual exchange of ideas kept up between them which could and should be, and which, if properly and freely made, would produce the most beneficial results. There seems to be too great a desire among our young men to desert the farm and follow, as they say, some more respectable calling. It would appear as if they were ashamed to be seen holding the plough, or using the axe or the scythe, but prefer leading a careless, idle, and in many cases dissolute life in towns and cities, which often ends in premature death caused by intemperance and vice. It is quite true that the husbandman must toil early and late if he would succeed, but who, I would ask, enjoys health and life more than he does? Although his bodily labor be severe at some seasons, yet he lies down at night with his mind at ease, and rises up in the morning fresh and vigorous for a renewal of his daily labors, with his mind free from the anxiety of providing for the payment of bills which the business man has to meet, and which in many cases he finds difficulty in doing. Although the husbandman may appear to get on in the world but slowly, yet, with industry, perseverance and economy, he can move on through life and enjoy a competency, which but few mercantile men, with all their toil and anxiety, can attain. In this, as most other countries, agriculture must be the occupation followed by the mass of the people, and if those employed in it would but join together as they might, many of our present evils could be avoided. Then let us join hand in hand, and endeavor, by every means within our reach, to advance the agricultural interests of our country. How, then, can we do this most effectually? It is evident we must encourage our young men to engage in it, and by our

advice and countenance urge them on in this noble calling. Many strange opinions exist in reference to the education of our sons in order to fit them for farmers. Some argue that little or no education is required to enable a man to carry on a farm successfully, and that view of the matter, many young men are sent out into the world with little or none. This is a serious mistake, and one which can be easily remedied in this country, where education is so accessible to all. Do not let it be said that labor and education should not go together. Give your sons a good sound education, and then, with proper encouragement, you will induce them to follow your own noble calling, and seek employment on the farm, comforting you in the evening of life instead of congregating in cities and towns, spending their lives in idle and dissolute habits, and in many cases ending in premature death. I would not desire it to be understood that every man will attain to a high position in farming, but he who possesses an intelligent and well developed mind is quite sure to take a leading place among his fellow agriculturists. Every farmer should be one by practice as well as by theory, in order to direct his men how to work and be able to judge when it is done properly and with economy. He should also be able to decide what crops are best adapted to different soils, in order to obtain the most profitable returns for his labour. A sound judgement should be exercised in cropping our land, in order to obtain the most profitable results. I am satisfied that of late years our farmers have sown wheat oftener than they should on the same ground. By this practice the soil becomes reduced and requires extra manure and tillage to bring it back to its usual fertility. I would therefore call your attention to this (as I consider) bad practice. I wish to draw your particular attention to the cultivation of flax. It is now being successfully cultivated in some parts of the Province, and as a considerable portion of our land is well adapted to the growth of it, and the prices range high, I would urge on you the cultivation of it as a valuable and remunerating crop. Formerly there was a difficulty in getting it prepared for the market, but this has been remedied by the importation of mills from Ireland for that purpose, which have done the work well, and will no doubt be the cause of encouraging its growth, in consequence of the facility and cheapness of preparing it for market. The root crop is one which should receive particular attention from us all; and is

of great importance to every farmer. In the first place it prepares the land for wheat, barley or flax, by working and cleaning it; and, secondly, in providing food for fattening stock, and is of the utmost necessity in keeping them in a healthy and thriving condition through our long and dreary winters. The greatest judgment should be given to the selection of good stock, and the purest and best variety of grain should be selected, as it costs no more to cultivate it than a mixed one. Your experience must have taught you that clean pure grain always commands an extra price in market. Just so with stock; a good animal will be raised as cheap as an ordinary one, and will sell for double the money. Let it be your rule to do everything well and in season; if you do not, depend upon it failure and disappointment will be the result. The subject of draining is one which should receive your best attention, because when properly carried out it produces the most beneficial results; and much of our flat moist land, with proper drainage, would produce fifty per cent. more than at present. As drain tiles are now being made in many parts of the Province and sold at a moderate price, I have no doubt that the drainage of our land will be increased from year to year, and will in time prove of incalculable benefit to the country. We cannot expect at the onset to enlist the feelings of any considerable number; it is only by bringing it practically before the people and showing them the utility of it, that one can expect to enlist their sympathy in the undertaking. Owing to the boisterous weather on the Lake and crowd on the steamers, and the difficulty in getting articles forwarded by rail, some stock and many articles intended for the Exhibition did not reach the Show ground, which has caused a deficiency in some departments; but on the whole, the Exhibition may be considered a very fair one.

The eighteenth Provincial Exhibition was then declared to be closed, and the exhibitors proceeded to remove their goods from the grounds.

AGRICULTURAL EXHIBITIONS.—JAS. MELLQUHAM'S FARM STEADING.

For the Agriculturist.

This is the season for agricultural exhibitions. Around Perth we have the Almonte, Brockville, and St. Lanark exhibitions to come off. At Montreal and Kingston, the Provincial ones. All this augurs well for the country,

and implies progress in a great and leading department. The farmer is waking up, and Canada will be great when he is great. When the Canadian farmer becomes distinguished and notable among the world's best cultivators of the soil, Canada will become so too. In view of this fact, we thought it an unwise attempt at public economy and retrenchment, when a late Finance Minister talked of taking off 25 per cent. of the grant to agricultural societies.

The present finance minister has announced that the grant will be continued (at least, so we understand him) as before. It might better be increased than diminished. Let Farmers look to it, that their great and vital branch of industry is not pared down; cast off and neglected by any set of rulers who may be placed over us. A little more attention might well be devoted by our Legislators, to the promotion of agricultural interests.

But our object in writing at present, is to call attention to the ingenuity and practical skill of one of our Drummond farmers, as yet unknown to fame in the great West. On Lot No. 7, in the 10th Concession of Drummond, about 9 miles from Perth, on the banks of our beautiful little river, the Mississippi, resides Mr. James Mellquham, Jr., son of one of our old veteran farmers, James Mellquham, Sen., now 77 years of age, who came out from Greenock, in the ship "George Canning" to Quebec, in 1821. The Ship had a six weeks passage, and brought out a number of emigrants, many of whom became industrious and worthy settlers in the townships of Ramsay and Dalhousie, and whose sons are now many of them scattered through Western Canada. It is to be hoped some one will preserve a history of their early trials, and final success in planting themselves on Canadian soil, before they all pass away, and while memory is yet strong and vigorous. The city gentry wax eloquent over their fine buildings, with their plate glass windows; they take great delight in their great bazaars of fashion and art, and pride themselves upon the wealth, the enterprise and magnificence around them. Very good. But what would their cities be without their country cousins? without the hardworking and painstaking cultivators of the soil? The man of the homespun coat may turn up his eyes at the wonders of the City, and exhibit his small acquaintance with its busy and sometimes vicious doings, and yet be one of nature's noblemen; one of the class of "solid men" whom the city would miss sadly, with their fertile acres, their harvests, flocks and herds.

We think, therefore, we are not wrong in claiming that our friend Mr. Mellquham deserves great praise,—not for an elegant mansion, or a costly farm steading heard of from afar,—but for a plain, simple, convenient, unobtrusive structure on his premises, within the reach of all well-doing farmers, costing not

more than other farm buildings, such as are commonly in use.

Making use of a small hill-side, Mr. McIlquham erected his barn 56 feet by 38—18 feet from the barn floor to the top of the plate—roof of a good pitch. The barn is placed on a stone foundation, and below the barn floor is the granary and root house; the former 23 feet by 30; the latter 23 feet by 16. Around the two ends and south side of this barn, are arranged the pig pens, calf pens, colt pens, cow house, sheep-house, hen house, and manure cellar, having at least 10 feet of a ceiling, with ample ventilation and light through windows ranging all around, each window $4\frac{1}{2}$ feet long and opening. The cow house and manure cellar is 106 feet by 28, sheep house 38 feet by 28. Next the barn is a feeding platform all around, 6 feet wide, with a trough for roots, cut food, salt, or water from the well and reservoir. Once the feeder enters the building, he can attend to all his stock under cover and shelter. The cattle step on a platform 6 feet wide, and readily of their own accord, place their heads through the openings left for the purpose to eat, when they are at once fastened by a wooden pin, between an upright rounded post and a moveable one, thus keeping each animal in its place till done. The manure, &c., is all dropped into the space behind the cattle, 15 feet wide and roomy, and when bedded, affords comfortable shelter from the winter at all times, the doors being closed or open, according to the weather. The roots are in the cellar close by, and cut on a platform beneath the barn; while chaff, refuse grain, &c., are also along side in the granary department. Hay, straw, &c., are all supplied from overhead, through the trap, in the barn floor. No seeds need reach the manure until passed through the animal. By means of the side-hill, all hay, grain, &c., are at once drawn into the barn, on the range over the apartments referred to. At the time of threshing, the grain is at once delivered into the granary through a hopper in the floor, and the straw forwarded into the space over the cow house, convenient for use.

It will thus be seen, so far as an imperfect written description will serve, without being illustrated by a drawing, that a great deal of usual labour is saved, no fodder is wasted, comfort both to man and beast secured, by a simple, yet ingenious and convenient arrangement of the premises. The manure does not freeze, and is ready for removal at any time, and is not subject to waste from exposure or being over heated, and can be turned by those useful animals the pigs, by scattering a few peas occasionally to induce a little activity. The hen house is made by simply erecting the nests against the barn wall, on the end where the sheep are kept, and fitting up a feeding box in which are put the refuse grain, seeds, &c. The windows are placed between

each of the strong beams which support the ceiling and floor over the manure cellar, and the manure removed in the usual way by carts drawn in through the doors at either end.

The building altogether presents, outside and in, a much neater and more attractive feature to the farm, than the usual ill-planned barns and buildings. Whatever criticism it may be subjected to, either from the imperfect description given of it, or from other supposed objections to the arrangement, of one thing we are assured, it is altogether very far ahead of those usually seen in our county; and we feel that Mr. McIlquham has designed and completed an arrangement of farm conveniences and premises, that entitle him to much consideration by his brother farmers, who can only command moderate means for the erection of farm buildings. If there is anything better anywhere we shall be glad to hear of it, keeping in view also the moderate cost.

W. O. BUELL,

Perth, 19th Sept., 1863. Prest. Agl. Socy.

GYPSUM AS A FERTILIZER.

MESSRS. EDITORS AGRICULTURIST.—As you have in your last number invited a statement of of the experience of farmers, in reply to your Goderich correspondent, who can speak practically as to the effect of plaster of Paris upon succeeding crops where it has been sown on clover, or on any other crop, I have taken up my pen with a view of, "if not settling the question at rest," at least of throwing, from my own experience, some light upon the subject on which your correspondent is desirous of possessing information.

The first year that I became a grower of Indian corn, happened to be on a farm greatly out of condition, and being my first year upon it, I was, as you may imagine, short of manure to enable me properly to carry out my farming operations.

And as a neighbour had told me of the extraordinary efficacy of the plaster of Paris, on most crops, to which I was then a stranger, I reserved all the manure I could muster for my root crop, and dressed my Indian corn heavily with plaster in the drills at the time of sowing, and afterwards when it was about a foot high, just previously to soiling it up the first time.

I kept it clean and well hoed, and it grew very luxuriantly, though it had not manure, and the soil greatly out of heart. Being that year short of hay I determined upon leaving two acres out of the five for fodder, and consequently did not thin the roots out at all, but after the second horse-hoeing, and before I soiled up the corn a second time, I again applied a very liberal dressing of plaster that I might get all the fodder I could. This more than answered my expectations, as it was computed that I got between five and six tons of good fodder, well cured, to the acre.

Now then for *the result* of this liberal and double dressing of plaster upon the subsequent crops!

The following year, the same five acres, with five more in the same field was sown with oats, and notwithstanding that the five acres had a slight dressing of manure, and that where the corn had grown the previous year had none, the oats on the five acre piece that had received the plaster the year before, *were more than a foot higher than the other part of the crops the straw much stronger, and the oats much finer and heavier*, and at that time I well remember that I estimated the yield at fully twelve bushels more the acre!

Now for the following year's result on the same piece of land sown with peas. Again the effect of the plaster was as plainly visible up on this crop as on the preceeding one. On the five acres where the plaster had been used, I had thought the peas would never have done growing and blossoming. *The straw proved much longer and stouter, and the pods were more numerous and better filled*. In fact, on *that part* of the field the crop was far the best in every particular! Here, I think your correspondent, and your readers generally, will allow there is proof enough of the effect of plaster on crops succeeding the former one plastered

But as you have justly observed, *it is not all soils* that need plaster, for wherever the soil naturally possesses the fertilizing properties of plaster or any substance closely approximating to it, of course the plaster can be of little or no benefit. The application of it would be somewhat tantamount to giving a man more whisky, when tipsy, to make him sober! By the like rule you don't give land more manure or lime when there is a super-abundance of it already in the soil, if you do, it is very evident you do harm instead of good. But I have found in my travels, and in conversation with others, that much prejudice exists, with some people, about the use of plaster as a fertilizer, where there has been but *one year's trial* of it by way of experiment, and I fearlessly assert that no man ought to be satisfied with *only one year's trial* of any experiment with the soil, especially regarding the efficiency of top-dressing with different kinds of manure or fertilizers, or of the growing of any kind of crops, *as the season alone*, after our very best efforts that skill and industry can suggest, may mar or make the crop, and if disappointment follows, he is too readily induced to believe that the failure was the result of the system adopted, rather than the effects of the season!

How often in my many years experience, have I known this to be the case, and I doubt not, but in many other practical and observant men have found it so likewise. I much regret, knowing as I do, the efficacy of plaster on certain descriptions of soil, that it should be used as sparingly as it often is. more especially so if the soil be sandy or gravelly loam, when

the occupiers of such soil in many cases, if out of condition, could nearly double his produce, and almost in all cases add, at least, one third, particularly in the case of grass for hay; and on young pasture land, not only on the staple of soil alluded to, but upon much stronger land, I have seen it used with a most marked success. One year I witnessed the most astonishing effect of it on a farm, at that time the property of the late Dr. Hamilton, at Queenston, then occupied by a Mr. Jones, upon wheat, barley, oats, clover and Timothy, and that gentleman told me he used it upon all his crops *every year*, and that before he had occupied the farm four years, he nearly doubled his cropping in bulk and weight throughout the farm, and that the quality of wheat was also materially improved, and this he attributed *chiefly* to the liberal use of plaster. Doubtless other operations were well carried on also in the cultivation of the soil.

I very much regret to say, that I am thoroughly convinced in my own mind, from what I have witnessed upon other farms, and from my own personal experience, that there are thousands upon thousands of dollars, lost annually to the occupier of the soil, and consequently to the country generally, through the want of a liberal use of plaster and lime in farming operations. And I well know, that in many instances, where both can be had at a trifling cost, almost at the farmer's door, he is either too supine, too stupid, or too prejudiced to use either one or the other, when in the old country we send fifteen, twenty and even thirty miles for both lime and manure, at a heavy cost, because we could neither pay rent, taxes, or labor, nor yet live without so doing!

I feel fully convinced that the produce of this country, in hay or grain alone, could, by a liberal use of lime and plaster, as auxiliaries with manure, be increased at least one third!

Does not such a matter as this demand the serious consideration, and earnest reflection of every farmer who rightly values his own personal interest, and the material welfare and progress of his adopted country.

I have Messrs Editors, spun this letter out to a length I certainly never intended when I took up my pen to reply to the query of your Goderich correspondent, but as prolixity is unfortunately my cardinal failing, I must trust to the patience of yourselves and readers to excuse it.

Ever yours truly,

LEICESTERENSIS.

Guelph, Aug. 31st, 1863.

EXPERIMENT IN SHEEP FARMING.

Editor of the Agriculturist.

SIR,—I feel a desire, through the medium of your journal, to lay before its readers a statement of the profits arising from ten ewes in one year. My object for so doing is to advocate more cattle and sheep and less tillage.

In 1861 I selected ten ewes, they were good strong common ewes, with plenty of bone and wool. I put them in good pasture about the 20th of September, and in the first week in October I obtained a Leicester ram, one of the right stamp, fulfilling the old adage, "fat back and woolly belly." The cross was a good one, I had sixteen lambs, one of which was deformed. The ewes had nothing but pea straw after they came into the yard, until the end of February, when I fed them about four quarts of oats and peas mixed daily, with a little clover hay, until they could get a little grass around fences, where spring crop, &c. had been put in. The allowance of grain I continued until I weaned the lambs, the last of July; the ewes I then turned off on summer fallow until they could be wanted for the same purpose again. I now gave the lambs the daily feed of grain with good pasture, and in November and December I added turnip tops and some small turnips that were not worth topping. I then took them to their winter quarters, and their daily allowance was about 150 lbs. of cut Swedish turnips, 3 pecks of oats and peas, and about 12 pounds of clover hay. I have in the account allowed 10 cents a bushel for turnips, 40 cents a bushel for the oats and peas, and 10 dollars per ton for clover, all of which I have carried out fully with interest of capital laid out, rent of land and other expenses, and have said nothing about the manure they made me, which I think paid me for my trouble. Mutton also was at a lower ebb than usual at that time of the year.

I weighed them on the first January, united weights 1,479 lbs.; first February, 1,739 lbs.; first March, 2,125 lbs.. when I sheared and slaughtered them; the result will be seen in the account.

I have made no charge for the ram, I kept him two years and sold him for two dollars more than he cost.

DR.	\$ cts	CR.	\$ cts.
To 10 ewes at \$4 each.	40 00	By 1,215 lbs. mutton, at 6½ cts.	81 92
From February to April, 9 bush peas and oats at 40 cents.	3 60	By 105 lbs fat, at 10 cts	10 50
And half ton clover.	5 00	" 15 pelts.	1 87½
From April to July, 17 weeks 17 bushels, at 40 cents.	6 80	" Deformed Lamb.	1 25
3 acres clover for pasture, at \$4.	12 00	" Wool from lambs, 119 lbs., at 25 cent.	29 75
Grain from July to Dec.	8 80	By Wool from ewes, 61½	15 37½
From Jan. 1 to March, 9 weeks, turnips at 21 bushels a per week, 18 bushels, at 10 cents.	18 90	By 10 ewes	40 00
Do for grain, 45 lbs per week.	15 00		
Do. for clover, 700 lbs.	3 00		
Expenses of shearing, smearing, &c.	5 00		
Interest on capital	2 40		
	123 50		
Nett profit	57 17		
	\$180 67		\$180 67

P.S.—I shall if agreeable, in the December number give you the profits arising from eight cows by making cheese. As I have said before I advocate stock instead of so much tillage,

which tends only to depreciate the value of the land. Yours, &c., A SUBSCRIBER.

[We thank our correspondent for the above practical and useful communication, and shall be glad to receive the further one he promises.—Eds.]

SEWAGE.

We insert below an analysis of a portion of the evidence recently given before a Parliamentary Committee in England on a subject that has for several years occupied public attention, and which is closely allied to the advancement of Agriculture, as it is the sanatory condition of the people. It will be seen that several of the most eminent scientific, as well as practical men proffered their evidence, and whatever difficulties may be observed among them on minor points, they all seemed to admit that in our present state of knowledge solid manure cannot be profitably manufactured from town sewage.

SIXTH SECTION.—*Would the application of Town Sewage to Land or to Crops be likely to cause a nuisance, or be attended with dangerous consequences?*

Lord ESSEX said that there was a momentary unpleasantness attending the application of sewage, when squirted over the land. "If you go to leeward of it, you can experience an offensive smell; but that may be obviated in a great measure by holding the distributor near the ground." Five minutes after the absorption of the liquid, not the slightest smell is observable. The men employed in distributing the sewage, although often engaged 10 hours a day, have never complained of any ill effects arising therefrom. His lordship had no idea that a large quantity of it thrown upon land would injure the sanitary state of the river into which it would ultimately flow.

Dr. R. A. SMITH, F.R.S., who has studied the question of the utilization of town sewage for several years, said that evaporation from sewage, conveyed in open gutters, would be dangerous to health. To get rid of this nuisance appears to him the great difficulty. "It seems to me the most important question to consider, and for that reason I have put every other question aside. I have given my reasons for believing that there is a constant evaporation from the surface not only of water, but of impure matter, even should no water arise. I have also given an account of what those gases are which do arise, and I have also shown that they rise instantly, and with great rapidity, and that, if the sewage matter be thrown upon the ground, the gases must continue to rise. The soil absorbs impure matter with great rapidity; but when land is sewaged, a great amount is left upon the grass blades, and on this organic matter the

action is very brisk. Sewage water should be used immediately; it will not preserve long." He thus spoke of recent experiments: "In order to trace the putrefaction of organic matter, I took blood as being a liquid of which we know pretty well the chemical composition, and as containing albumen, which may be said to be a type of those putrescible organic substances which can be found in the soil or in manure. I have found that, whenever the temperature arose to about 54 deg., the oxidation was intensely rapid; and there was more than oxidation—they was an evolution of carbonic acid gas, from the destruction of the substances in solution in the blood itself. These gases came out with immense rapidity. The most abundant was carbonic acid, which rose from 82 per cent. to 95; sulphuretted hydrogen was 1.93 per cent.; the remaining 3 per cent. consisted of carbonic oxide, carburetted hydrogen, hydrogen, and nitrogen. These are the gases given off from all the sewage water, and come into our houses from the sewers, and which are given out from the land also when land is in a state of too great moisture and heat. I conceive it to be an important thing to prevent the destruction of this organic matter, for two reasons—first, for the sake of health; and next, for the sake of preventing its loss." With respect to the pollution of drinking water, Dr. Smith affirmed that water, which contained ammonia in the proportion of only 2 grains to 100 gallons, had produced epidemic in the people who drank it; but that sewage water contained from 50 to 700 grains in every 100 gallons. Water which has passed through the soil to deep drains he considered not likely to contain more than a grain a gallon of mere organic matter analogous to peat. He considered that sewage might be immediately disinfected when applied to fallow land, but not in the case of grass land. He believed the presence of an unpleasant smell a proof of the presence of danger, and that absence of it is not a proof of absence of danger.

Mr. J. B. LAWES stated that, although the smell in hot weather is strong, it is not perceptible more than a quarter of a mile off. At Rugby no deodorizer is used; and if sewage is employed with a moderate radius of London, it would be well to use some cheap, harmless substance, such as lime. He maintained the opinion expressed in the report of the Commission, of which he was a member, namely, "that the absorption of the offensive gases of sewage by the soil and by vegetation is so rapid, and there is no perceptible smell five minutes after the application; and it is therefore plain that, if closed drains or pipes were substituted for open ditches, the inhabitants of Edinburgh would cease to have cause to complain of this employment of the sewage."

Dr. A. W. HOFFMANN appeared to think slightly of the nuisance produced by sewage; and were it applied at proper times, upon proper soils, he considered that no harm would

necessarily result. He observed that in the course of 6 to 10 hours the composition of sewage is changed, and that in the course of 6 to 10 days decomposition is accomplished; that the process is most perceptible in a tank, and of course less so when the sewage is allowed to pass over the surface of a field, on account of the great area presented.

Professor J. T. WAY gave utterance to an opinion most unfavourable to the practice of discharging sewers into rivers. With regard to the absorptive power of soil; he said he found there resided in soils an ability "to separate from liquids containing manure, ammonia, potash, phosphoric acid, and magnesia—all the important elements of manure; to separate from water, not merely from infiltration, because these things would pass through a filter, but by the peculiar chemical attraction possessed by the ingredients of a fertile soil for these liquids; so that if we were passing a liquid, containing manurial matters through a given quantity of soil, the water would pass through, and these matters, would be retained—fixed in the soil." This he regarded as a designed provision for the preservation of manuring principles from being washed out of the soil by rains. Sewage is deodorized the moment it sinks into the soil. On grass land a certain portion remains upon the plants and this might cause some smell. The water of sewage is perfectly clear as it runs off the surface of the field, having gravitated from a higher to a lower level, or as it precolates through to the drains. This is the case at Croydon, where the water, after flowing over 300 acres of land, passes off in a beautiful clear state to the river, and at Edinburgh. He considered a large reservoir of sewage liable to very great objections.

E. FRANKLAND, Esq., F.R.S., a gentleman employed by the Board of Works to inquire into the deodorization of sewage, said that, "in the application of very concentrated and nauseous sewage to land, I have found that the odour disappears almost immediately after the application; while the liquid flowed from the London sewers, even in very hot weather, is really not very disagreeable." In ordinary seasons he considered deodorization quite needless, and when properly used, apprehended no disagreeable or hurtful effects from the use of sewage.

Mr. Alderman MECH, who described his land as being perfectly drained, said that ordinarily no ill effects occur from passing the drainage water to the brook; but when "a strong dose of sewage had been administered the water has come through the land highly coloured, and smelling." He considered very large applications of sewage likely to become a public nuisance. Eight hundred tons per acre could not be used without endangering the health of the population. Two thousand tons of London sewage might be applied, for by the new London lines of sewage there will be no stagnation,

and the liquid will reach its destination almost before change has begun to set in.

Dr. AUGUSTUS VOELCKER stated that the power of the soil to arrest the manurial properties of sewage has its limits. "I find," said he, "that while the solution is made weak, even a clay soil will not remove from it the same quantity of ammonia, or of other fertilizing matter, such as potash, as will be removed from a more concentrated solution." Very strong and very weak solutions both carry away with them a large part of their ingredients, and the water from a solution of medium strength passes away in a state of the greatest purity. He said that sewage was deodorized the instant it came into contact with the soil, but explained deodorization to mean the parting only with some of the fertilizing properties inconvenient to the senses, not necessarily with all. The ordinary sewage he considers to be diluted, and it scarcely parted with any of its fertilizing properties, and produced little more effect than the same amount of pure water running over the soil.

Mr. W. S. TILL, Borough Surveyor of Birmingham, stated that the sewage water, after having been used for irrigation, passes into the river. It is of a light brown colour, not offensive to the nose, and contains distinct traces of ammonia.

Mr. J. T. BLACKBURN, a farmer, said that, compared with the dressings of solid manure, the advantage in point of nuisance, was quite in favour of sewage. There was no need of deodorization, if the land was well drained. The system of deodorization pursued at Carlisle he thought quite unnecessary, because the sewage arrived at the outfalls before decomposition had commenced, and was used in a perfectly fresh state, without smell.

Mr. J. FENTON, Engineer to the Croydon Board of Health, had testified to the clearness and purity of the sewage water when it had passed over the 240 acres. It had the taste of ordinary rain water. At the time when the sewage was passed over 15 acres only, the Board was liable to injunctions; but now the water is so completely purified, that the river water sustains no damage, and there could be no ground, as formerly, for injunctions. The neighbourhood, in fact, now complains of no nuisance. He gave his opinion in favour of a close sewer, in preference to an open drain, to carry sewage upon the land, as less liable to produce a nuisance. When on the land, he preferred open drains to pipes, for with the latter a great "head," and a powerful engine to drive the stuff through, or a fall from a great height, would be absolutely requisite, and very costly to maintain. In the summer months there is a smell at the filter works, but by the use of carbolic lime it is easily overcome. Since 1859 there has been no complaint and yet there are houses within a quarter of a mile from the works.

Mr. GEO. KING stated that the sewage from

the lunatic asylum at Hayard's Heath, where 600 patients are confined, after passing over 17 acres of land, falls quite purified into a brook. Formerly it spoiled the water of the brook into which it fell, and it was necessary to carry it by a pipe drain to some distance beyond the village; but since it has passed over the land, it has been rendered quite harmless.

Sir JOSEPH PAXTON, M.P., did not think deodorization by any means always necessary, but he thought it generally advisable to disarm prejudice. The highly concentrated sewage used at Syderham gives rise to at little or no smell. This contains only one-tenth the water which is in the London sewage; and yet concentrated as it was, Sir Joseph found it practically pure after having passed through six feet of soil. A little water was always applied afterwards to wash it into the soil. The large tanks excavated at the Crystal Palace for the reception of sewage, being thoroughly ventilated, are not known to exist by the visitors, although the opponents of this plan prophesied the greatest trouble and annoyance from their being placed under the main entrance of the building.

Mr. G. H. HENDERSON said that the application of sewage at Colney Hatch produced no disagreeable effects, and was not complained of by the medical authorities. The sewage which escapes is deodorized; that which is used for irrigation is deodorized in its passage through the soil, and rendered perfectly pure.

S. C. MILLER, Esq., said, in reference to the Craigintunny meadows, that the ammonia, the offensive ingredient of sewage, was immediately absorbed by the roots of the grass, and ceased to smell. Any person may walk over the meadow up to their ankles in water, and would not perceive that they were walking in impure water. He said that residing as he did the greater part of the year on the west side of these meadows, and within a hundred yards of them, he experienced no nuisance, a circumstance due to the extreme dilution of the sewage. The Piercehill Barracks, which are *vis-a-vis* with his house, have been reported the healthiest in Scotland. "We have about six families partly engaged in irrigation, and some who have no other motives in living there than their own fancy, being perfectly unconnected with irrigation, living in an old steading in the centre of the meadows; and I think that we have as fine children and healthy people as are to be found in the whole kingdom."

Mr. JAMES HOPE said, that those who used the path between Edinburgh and Leith, which runs across the Craigintunny meadow, complain a little sometimes of smell. The people in the neighbourhood have made no complaint.

Mr. JOHN CHALMERS MORTON visited the Craigintunny meadows on a fine, windy, cool day, and found a "decidedly disagreeable smell." He had heard of no insalubrious effect arising from it to the people in the neighbourhood. On the fields of Carlisle no smell was found

from the deodorized sewage, excepting that which arose from decaying vegetable matter. Town-sewage he considered could not be applied without proving a nuisance, and should only be used where population is scanty. Should the application of sewage be reduced to the point when it was no longer a nuisance, the produce would be much diminished also. As to the relative absorption of soils, he thought those fertilizing ingredients which are of a volatile character were absorbed in proportion to the quantity of clay which they contain; "but then, in proportion to the quantity of clay which they contain in their composition, their mechanical power of dealing with water diminishes."

Mr. J. BENSON said that the houses were within a quarter of a mile from the Duke of Bedford's meadows at Tavistock, and that the smell on a foggy day would be no worse than what would arise from land newly manured with solid dung. It is offensive, but not, he thought, deleterious. People have actually been building nearer, the nuisance, which is not complained of. No fevers, &c., appear to have attacked the quarter of the town where these meadows lie.

Mr. GEORGE McCANN said no smell arose from his sewage irrigated meadows, and no injurious effect to the tenants of numerous cottages within 30 to 40 yards of them. The water which runs away is much discoloured, and that which drains from the Malvern Link into a small stream which runs past Lord Beauchamp's estate is considered very offensive.

P. W. S. MILES, Esq., said that when the sewage is used on the lowest field, a quarter of a mile from his house, even when the wind is in the direction of the house, no smell is perceptible. Nearer it is not pleasant, unless the wind blows from another quarter.

Mr. W. WESTWOOD stated that before the sewage of Croydon was run over a large area of land, at a time when a great part of it was run into the brook great complaints were made. A deposit of filth was left along the brook for a mile or two through the country. The people in the neighbourhood made no complaint.

Mr. F. WILEY employs sewage 400 yards from his residence without bad effects: still, on sanitary grounds, he thought the application of sewage should be as far removed as possible from human dwellings. When the supply of water per person is small, the sewage is apt to stagnate in the sewers, and it will then give out a very offensive and dangerous odour; but when plenty of water is used, this is not the case, for the sewage passes quickly into the field, and is utilized before decomposition takes place. The drainage and sewage at Coventry is now, he said, "quite satisfactory in a sanitary point of view." He also stated that Mr. Auston had been down to deodorize it, but that they were perfectly satisfied that the expense of using per-nitrate of iron would be too great, and lime

was, as proved at Leicester, destructive of the manure.

The Seventh Section of this analysis embraces the evidence given in answer to the following question:

Can solid manure be profitably manufactured from town sewage?

J. B. LAWES, Esq., stated it as his decided opinion that in a commercial point of view the manufacture of sewage or sewage residuum into solid manure would be unsuccessful. "The most valuable part of the sewage remains in the liquid, and cannot be extracted."

Professor J. T. WAY was also of opinion that a dry manure cannot be profitably obtained from sewage—not by means either of precipitation or evaporation. Some such process might be pursued with advantage as a means of getting rid of the nuisance from town, provided that the town pays the expense. For sanitary purposes considerable good might be gained by precipitation; but pecuniarily, nothing—for agricultural purposes the result would not pay for the expense.

Dr. EDWARD FRANKLAND agreed with Mr. Way's opinion.

Mr. Alderman MECHE said that no hope existed in the minds of scientific men at present of abstracting and reducing to a solid matter the valuable ingredients of sewage.

Dr. AUGUSTUS VOELCKER spoke of all the schemes put forth to reduce sewage to solid manure as failures. He entertained no hope of ever producing a solid manure that will pay the expense of conversion.

TOP-DRESSING FOR WHEAT.—Dr. Voelcker, chemist to the Royal Agricultural College at Cirencester, England, gives the following composition for top-dressing for wheat on light soil:—Nitrate of soda, $1\frac{1}{2}$ cwt.; common salt, 3 cwt.; Peruvian guano, 2 cwt.; soot, 40 bushels—to be mixed with dry substances, sand, and cool-ashes, so as to make about 60 bushels of a manure which will be sufficient for three acres.

FEEDING QUALITIES OF OIL CAKES.

The following is an abstract of a lecture, by Dr. Macadam, being the fourth lecture of his course especially devoted to Agricultural Chemistry, now being delivered by him in the New Veterinary College, London:

The ordinary food of stock, consisting of grass, hay and turnips, is very bulky in its nature and contains a small per centage of flesh-forming ingredients, accompanied by a large proportion of heat-producing constituents and refuse matter. The digestive system of the sheep and the ox are especially designed for making the best use of such food, but the

fattening process proceeds slowly unless an admixture of rich food is given. The oil-cakes which are now so extensively consumed by stock, supply in small bulk, and with a comparatively little trouble to the animal, a large amount of fat and flesh forming ingredients. The feeding qualities of oil-cakes are mainly dependent on the presence of albuminous compounds to the extent of 20 to 40 per cent. accompanied by an average of 12 per cent. of oil, but besides these, there is a large amount of starch and woody fibre, along with a little sugar and gum, and saline matter containing phosphates (the principal element in bones). In short, we have present in an oil-cake the important feeding properties of the ordinary food of animals in a concentrated form, and readily capable, when partaken of by the animal, of becoming flesh and fat.

One of the great advantages of a feeding stuff with the composition of an oil-cake, is the presence of so much ready formed oil, as this is easily assimilated by the animal system, and is readily stored up as fat. At the same time, the digestive powers act on the starch, gum, sugar, and part of the woody fibre, resolving these into compounds which, as they circulate through the blood, become elaborated into fat capable of being also deposited in the tissues. The albuminous constituents also becoming transformed before and after entering the blood, and ultimately are woven into flesh in the living structure, whilst the phosphates are taken up into the blood and supply the wants of the bones.

Linseed-Cake is regarded as the first-class oil-cake, and it is obtained from linseed by bruising, steaming, and subjecting it to a pressure in hair-cloth bags, when about 25 per cent. of oil is extracted, and linseed cake is left. The better kinds contain 24 to 30 per cent. of albuminous compounds, and about 12 per cent. of oil. Linseed oil-cake is liable to be mixed with inferior oil-seeds, bran and other cheap materials, which detract from its nourishing properties, and occasionally impart to it noxious properties. A simple way of examining linseed-cake is to grate down about half an ounce, and put it in about half a tumbler of water, and stir for a short time. Good cake gives a light-coloured jelly, with an agreeable taste and smell. If other seeds be present as impurities, they communicate a disagreeable taste and unpleasant odor, like refuse canary seed.

Cottonseed-Cake is made from the seed of the cotton plant in two ways. (1) By crushing the whole seed—husk and kernel—yielding a cake with little more than 20 per cent. of albuminous compounds and 6 per cent. of oil, and which is very objectionable as an article of food, owing to the presence of the fragments of husk and much cotton fibre. (2) The cake is prepared by first shelling the seeds so as to remove the husk, and the ker-

nel so obtained is compressed so as to extract some of the oil, and a very superior feeding cake is left, which contains from 30 to 40 per cent. of albuminous compounds, and 15 to 18 per cent of oil. In the shelled or decorated cake no fragment of the husk should be observed. The newly prepared or fresh cake is yellow in color, somewhat resembling mustard, but becomes brown on the surface when exposed to the air—especially when damp—and the brown tint passes gradually to the centre as the cake gets aged.

Rape-Cake is the cheapest kind of oil-cake, but many varieties are equal to linseed in composition, and in some cases have been found equally useful in the feeding of stock. It is prepared by bruising and compressing rape seed, which yields rape-oil, largely used as a lightening oil, and leaves in the bags the rape-cake. This description of cake has naturally a pungent taste, which cattle and sheep rather dislike at the first, and very often it is found necessary to mix the bruised cake with locust beans, or merely to sprinkle the cake with treacle, which to a great extent mask or cloak the pungency of the cake, and besides add to the seeding properties. Rape-cake is often mixed with other seeds, which necessarily impart blistering properties to the cake, and thus give rise to rather curious effects in the alimentary canal of the animal partaking of such a mixed cake. The presence of the mustard seed may be easily determined by reducing the cake to powder, and mixing it with a thin paste with cold water in a pickle bottle, which can be corked up. If the quantity of mustard is great, the characteristic smell of made-up mustard will be decidedly apparent in a quarter of an hour, but failing its appearance, then the experiment may be allowed to go on for twenty-four hours, when should no pungent odor be recognized, and the taste is not extra strong and pungent, then mustard is not present in quantity to be at least productive of harm; but if the mustard odor is obtained; and especially if a very strong pungent taste accompany it, mustard is present in quantity to be injurious to health of animals partaking of the cake.

The judicious employment of the various kinds of cake in the feeding of animals is productive of the best results, but cakes of all descriptions are too rich to be given alone to feeding stock, and the daily quantity should be limited. In the feeding of sheep with cake, it would be safer if some plan could be adopted whereby each one would only take its allotted share. During recent seasons, several fatal cases happened, not only where a too liberal dose of the rape-cake had been thoughtlessly given, but even where the proper quantity was weighed out for a given number of sheep but as one sheep, could appropriate its own and its neighbor's shares, evil consequences resulted.

In concluding the subject of oil-cakes, special reference must be made to the very rich nature of the droppings or manure obtained from stock fed on cake. The improvement in the nature of manure through the instrumentality of the oil-cake, is mainly due to a part of the albuminous or nitrogenous compounds passing through the animal without having been taken up by the system. The proportion of the nitrogenous ingredients of the oil-cake which thus pass direct through the alimentary canal, and appear in the manure, is variously estimated at seven-eighths down to nine-twentieths of the whole, and therefore we may safely consider that the manure represents one-half of the total value of the oil-cake.

TOBACCO CULTURE.

We compile the following from the best material at command, in regard to the cultivation of "ye weed."

The plants should be topped when the majority of them are ready to bloom by breaking off the main stalks with five or six leaves. In about a week the suckers should be taken off, and in ten days repeat again. It will usually be ready to harvest during the first part of September. It should be suckered the last thing before harvesting. It should be cut close to the ground with a small saw and laid down carefully to wilt, but the hot sun should not be allowed to shine long upon it as it will burn it and render it worthless. As soon as it is thoroughly wilted, say by noon, it should be got in and hung in the building prepared for its reception. If it is left in a pile and heats, it is spoiled. Handle it by the butt and hang it butt end up, on poles or rails, by tying a stout twine near the end of the pole and passing it round a butt tightly, then put it around another in the same way but on the opposite side of the pole, and so on until the pole is full, leaving a space of about six inches between each plant. The poles or rails used should be from four to five inches through.

We presume, any outbuilding, where there is a free circulation of air and open at the sides, but not enough to let in the sun, would answer every purpose. It is sufficiently cured when the stem in the leaf has become hard and dry clear up to the main stalk. After being dried thoroughly on the poles, it may remain until any convenient opportunity for stripping, without injury. In stripping, the leaves should be broken off at the junction with the stem, and divided into two sorts, the bests and the small and broken. Each kind should be put in hands of twenty to twenty-five leaves by putting the butts of the leaves together and winding a leaf around, passing the end under a part of the hand and again pressing them together.

It is now ready for sweating. The hands should be placed in a frame, tip on tip, with the round end outward. It should not be piled more than fifteen inches deep, and covered with a board or cloth to preserve the moisture. It should be examined occasionally and if liable to heat and mould, should be repacked. If the sweating goes on well it is perfected in about five days. It is then ready to use, put in such form as suits the grower, or packed in cases for the market. If for market it is packed and pressed into cases or boxes, the box nailed up and kept in a dry place until marketed.—*Maine Farmer.*

Agricultural Intelligence.

THE LOWER CANADA PROVINCIAL EXHIBITION.

The Show of the Lower Canada Agricultural Association was held on a very convenient spot at the base of the mountain, in the city of Montreal, September 15th-18th, and must be regarded on the whole as a decided success. The weather was fine, but a little too hot and dusty to be pleasant, except Friday, the closing day, when heavy rain commenced, sadly inconveniencing exhibitors and visitors, and greatly interfering with the winding up of the show.

The live stock department was quite extensive, and very conveniently arranged. It comprised several first-rate animals in each of the classes. Blood horses were particularly good, but we felt somewhat disappointed at the indifferent display of French Canadians, a beautiful and useful breed when maintained in their purity, but which seem of late to have been much intermixed. East of Montreal, as at Three Rivers, Quebec, &c., the Canadian horse is more common and of better quality. Although there were a number of animals of superior merit belonging to Lower Canada, in the various classes, the show was in this respect much indebted to the several breeders residing in the western section of the Province, as the following extract from the Prize List attests:—

J. Coote, London, C.W.: 1st and 2nd prizes, for span of draught horses over 1800 lbs. in weight. Simon Beattie, Markham: 3rd prize heavy draught stallion, 1300 lbs.

DURHAMS.—George Miller, Markham: 2nd prize bull-calf under one year. Do.: 3rd prize, for cow four years old and upwards. Samuel Beatty, Markham: 2nd prize, three year old cow. George Miller, Markham: 2nd prize, two year old heifer. Do. 2nd prize heifer calf under one year.

DEVONS.—Chris. Courtice, Darlington: 1st and 2nd prize, four year old bull; do. 1st and 2nd prize, one year old bull; do. 1st and 2nd

prize, bull calf under one year; do. 1st, 2nd and 4th prizes, cow four years old and upwards; do. 1st prize, three year old cow; do. 2nd prize, two year old heifer; do. 2nd and 3rd prize, one year old heifer; do. 1st and 2nd prize, calf under one year.

GALLOWAYS.—John Snell: 2nd prize, one year old bull. Geo. Miller, Markham: 1st prize, three year old cow. John Snell, Edmonston, C.W.: 1st prize, bull calf under one year; do. 3rd prize, one year old bull; do. 3rd prize, cow four years old and upwards; do. 1st prize, one year old heifer. George Miller, Markham: 1st prize, heifer calf under one year; do. 2nd prize, one year old heifer.

FAT OR WORKING CATTLE.—George Miller: 1st prize, fat cow or heifer.

SHEEP, LEICESTERS.—John Snell: 1st and 2nd prize ram, two years and over, Leicester. Alfred Jeffrey: 3rd prize do. do., Vaughan. John Snell: 1st and 2nd prize shearling ram. Alfred Jeffrey, Vaughan, 1st prize ram lamb. John Snell: 1st prize 2 years, and over. Alfred Jeffrey: 3rd prize; Do.: 1st prize two shearling ewes. George Miller, 3rd prize do. Alfred Jeffrey, Vaughan: 1st prize two ewe lambs. Andrew Ray, Granby: 3rd prize do.

COTSWOLD SHEEP.—George Miller, Markham: 1st prize shearling ram, Cotswold. John Snell: 2nd do. do. Alfred Jeffrey: 3rd do. do. Geo. Miller: 1st prize ram, two shears and over. John Snell: 2nd and 3rd prize. George Miller, Markham: 1st prize ram lamb. Andrew Jeffrey, Vaughan, 2nd prize. George Miller, 1st prize two ewes, two shears and over. John Snell: 2nd do. Alfred Jeffrey: 3rd do. Geo. Miller: 1st prize two shearling ewes. Alfred Jeffrey: 2nd prize do. George Miller: 1st prize two ewe lambs.

OTHER LONG-WOOLED SHEEP.—Simon Beatty, Markham, 1st prize, ram, two shears and over; George Miller, 1st prize shearling ram; John Snell, 2nd do; Alfred Jeffrey, 3rd do; George Miller, 1st prize, two ewes, two shears and over; John Snell, 2nd prize; George Miller, 1st prize, two ewe lambs.

SOUTH DOWNS.—Alfred Jeffrey, 2nd prize ram, two shears and over; Alfred Jeffrey, 2nd prize ram, two shears and over.

CHEVIOTS.—George Miller, 1st prize, ram lamb; do. 1st prize, two ewes, two shears and over; do. 2nd do; do. 1st prize, two shearling ewes; do. 1st prize, two ewe lambs.

OTHER MEDIUM-WOOLED SHEEP.—Geo. Miller, Markham, 1st prize, ram, two shears and over; do. 1st prize, shearling ram; do. 2nd prize, ram lamb; do. 3rd prize, two ewes, two shears and over; do. 1st prize, two shearling ewes; do. 1st prize, two ewe lambs; Alfred Jeffrey, Vaughan, two fat ewes.

Manufactures, mechanical productions, grain, &c., were exhibited in the Crystal Palace, a building of large dimensions, having two ranges of galleries, situated within a convenient distance from the cattle show ground. This

department was indeed highly creditable to the skill and industry of Montreal in particular, and was numerously attended. There were not many things from Upper Canada, but the subjoined list will show that articles from this section were considered worthy of prizes:—

J. G. Beard & Sons, Toronto, 4 prizes for stoves. 1. Cooking stove with furniture. 2. Do. with apparatus for heating water. 3. Parlor stove for coal, another for wood. 4. Collection of stoves. A prize was awarded them for their hall stove, but for some reason is contested. Others are honorably mentioned. A prize is also given for their portable forge.

W. H. Sheppard, Toronto, chimney piece, 2nd prize.

Saunders, London, C. W., first prize for medicinal fluid extracts.

William Millikin, first prize, 3 sides harness leather; do. do., 3 sides upper leather; do. do., 3 sides hose leather; do. do., 3 sides skirting leather; do. do., 3 sides carriage cover leather; do. do., 2 sides upper leather; do. do., 12 sheep skins coloured; do. do., 6 calfskins dressed.

Billings & Co., Galt, C. W., honourable mention for assortment of leather.

D. Chisachi, Kingston, C. W., first prize, assortment of 6 hats.

W. H. Sheppard, first prize, 1 sun-dial in marble.

Rollo & Adam, Toronto; Brithish American Magazine honourably mentioned.

We regret that want of space forbids a more detailed notice of this interesting exhibition, which clearly indicated that both agricultural and mechanical arts are making certain progress in the eastern section of this Province. Before concluding, however, we must just notice the Horticultural exhibition (although not directly connected with the other) held in the large Skating Rink in the immediate vicinity. It consisted of a very extensive collection of fruits and flowers, many of which were beautiful specimens of the finest quality. This exhibition attracted large numbers of visitors every day, and during the evening, and much of its success we learnt was due to the indefatigable exertions of the Secretary and Treasurer, Mr. J. E. Pell, lately of this city, whose zeal and services in matters of this kind are well known to many of our readers.

MONROE COUNTY (N. Y.) AGRICULTURAL SOCIETY.

The Annual Exhibition of this Society was held at Rochester, September 9th and 10th. The live stock department, owing to several causes, did not equal preceding exhibitions, but the show of fruits and flowers was exceedingly good, clearly indicating the adaptation of the soil and climate of Western New York to these beautiful and useful productions.

A novel characteristic of this exhibition consisted in the liberal premiums offered by the Society for wheat, open to all the States and British Provinces. For the best 20 bushels of white winter wheat \$150, and the second best \$76, were offered. For red winter wheat of 20 bushels, \$100 and \$50, for 1st and 2nd prizes. Liberal premiums were given for 2 bushels of white and red winter and spring wheat. The entries, although only about twenty were made in all, attracted much attention, and will be productive of great benefit. The wheat on exhibition was from New York, Michigan, Ohio, Illinois, Maryland and Canada. The first prize for white winter wheat of 20 bushels was divided between Mr. I. H. Anderson, of Hamilton, Canada West, and Mr. E. S. Hayward, of Brighton, Monroe County, N. Y.; the judges considered them equal. Both were of excellent quality, the former the blue stem, weighing 65 lbs, per bushel, the latter was the Soule's variety. The same parties had divided between them the first premium for two bushels. The prize wheat became the property of the Society, and was sold by auction on the ground, averaging \$2.75 per bushel. The Canadian wheat was purchased by Mr. John Johnston, of Geneva, for seed.

After making the awards the Committee (through their Chairman, Prof. Geo. Buckland, of Toronto, C. W.,) concluded their report as follows:—"The specimen of twenty bushels exhibited by the Hon. Jacob Hinds, is deserving of special notice and commendation, that gentleman having succeeded, after several years' experiment, in bringing it from a spring wheat to a white winter variety, to its present state of perfection. The Committee cannot but regret that so few competitors appear at this first attempt of an International Wheat Show, and earnestly hope that an object of so much importance will be annually attended by increased support and success."

The President, Joseph Harris, Esq., of the *Genesee Farmer*, brought the proceedings to a close by an admirable address, in which he treated more particularly of the present condition of wheat culture in Western New York.

UNION EXHIBITION.

The Societies of West York, the Toronto Electoral Division and the Horticultural, held what is termed a *Union* Exhibition in the Crystal Palace and adjoining grounds in this city on the 6th, 7th and 8th inst. Unfortunately the first day was as regards weather unpropitious for arranging and judging the various articles, and many things were kept back in consequence, but the next day was worse, accompanied by continuous rain, which prevented the attendance of visitors, and most seriously affected the interests of the Show. Thursday was threatening, but, upon the whole, fair, and considerable numbers visited the Exhibition, while a vast multitude was at-

tracted to the Volunteer Review, which proved highly successful.

If the weather had been favourable the Union Exhibition would have realized the expectations of its projectors, and the receipts would have no doubt both met the demands of the large premium list and left a handsome balance to be carried to the credit of the Society. The live stock department, as most others, would no doubt have been more extensive under favourable circumstances, yet it was not by any means discreditable to a local Show. Horses were good and in fair numbers, while the leading breeds of cattle, including Durhams, Devons, Ayrshire and Galloways, were represented by excellent specimens from most of the distinguished local breeders. This was also the case with sheep, especially the Leicesters and Cotswolds, from Messrs. Snell, Miller, &c. In pigs and poultry the show was deficient. The grain also fell short in quantity, and the quality generally was not superior. Some interesting specimens of new varieties of grain were shown by Captain Shaw and others, from small quantities of seed received last year from the London International Exhibition, which were very interesting; some of which will probably prove, on further trial, of practical value to our agriculture. In implements, carriages, &c., the show was not abundant, but many of the articles were good; as was likewise the case with oats and manufactures. The display of fruit and vegetables was superb, almost, if not quite, equal to most of our Provincial Exhibitions. This department was unquestionably the best of the whole, clearly indicating the progress which gardening and fruit-growing are making in this section of Upper Canada. It is to be hoped that this effort at a union of different societies in one exhibition will not, mainly in consequence of unpropitious weather, deter its promoters from a further trial next year.

THE ROYAL AGRICULTURAL SOCIETY OF IRELAND.

Annual Show at Kilkenny.

The exhibition of this important society took place the latter end of August, in the good old city of Kilkenny, and was attended by a large amount of success. In some departments it was not equal, as might be expected, to some previous shows in such localities as Dublin, Cork and Belfast; but all accounts represent the number and quality of cattle, horses, sheep, &c., as highly creditable and encouraging. The *Irish Farmer's Gazette* observes:—

Fifteen years have passed since the "Irish Royal" held its show within the bounds of the ancient city of Kilkenny, and there are many who, doubtless, can well remember the anxiety with which the meeting in '48 was

looked forward to, and the disagreeable circumstances under which it was held. Two years of unexampled distress had prostrated the energies of the country, while at that very time agitation had roused the evil passions of men to an alarming extent, and fears were even entertained that the meeting would not be permitted to pass over without some serious disturbance. All those untoward circumstances had, of course, a depressing effect, and we believe we may say that all who had business at the show were heartily glad when it was over.

At this time we, too, have passed through our "three bad seasons," but we have not the additional burden to bear of fierce political excitement, and we have emerged from our recent difficulties under the influence of one of the finest seasons, thank God, which any one can remember. Things are by no means in the condition they should be, we grant, but they wear an infinitely more cheering aspect than they did in '48, and there is a hopeful spirit abroad which we trust will yet eventuate in a career of unchecked prosperity for this fine country.

The show of implements was very good, numbering 54 stands; but none of the stands were so extensively filled as they used to be, and we miss for some years, as well as on the present occasion, the names of some first-class houses. This is to be regretted, for we have not that variety of small and large implements and machines to choose from to satisfy the wants of the several grades of occupants.

HOWARD'S STEAM PLOUGH.

On Tuesday, Howard's apparatus for cultivating land by steam power was in operation in the demesne of Dunmore, about two miles from Kilkenny. The land had been under a crop of wheat, which had just been removed, and the surface very foul with couch and other weeds, besides the stubble, from the speed under which the plough was driven, collected and choked up the ploughs, which rendered it necessary to stop and clear the implement frequently, till a man was appointed to keep it free, after which everything went on gallantly, the plough passing quickly through the land at such a smashing pace as to turn over the land in the best manner six inches deep, and at the rate of one statute acre per hour. The steam was kept up on the following day, with directions to the attendants to put the apparatus in motion, should any respectable group go out to witness its power and effects, of which many availed themselves, so that the universal opinion was that Howard's apparatus for cultivating the land with steam power was a decided success; and we are glad to learn that the whole apparatus, exclusive of the steam engine, was purchased by Wm. Malcomson, Esq., of Hortlaw, so that it remains in Ireland.

We are disposed to make room for the speech of His Excellency the Lord Lieutenant, in reply to the toast of his health at the Banquet, indicating as it does the state and prospects of Irish agriculture, in which we, as British Colonists, must always feel a deep interest. Ireland, in consequence of three successive seasons of bad harvests, has been considerably thrown back, but the present year is a bountiful one, the commencement, we trust, of a long series, producing peace and plenty.

His Excellency, on rising to respond, was received with loud applause. He said—My Lord Beesborough, my lords and gentlemen—I have reason to return you my deep and heartfelt thanks for the honour you have done me, and so kindly done me, in drinking my health. My noble friend, your president, has alluded to the frequent occasions on which it has been such a deep source of gratification to me to attend the meetings of the Royal Agricultural Society of Ireland, which have now carried me heartily over the whole surface of the country. But I can assure you that this feeling of satisfaction has never been more fervently felt by me than on the occasion of our being assembled within the ancient city of Kilkenny; for, without pausing to dwell upon its picturesque site or its historic lore—its silver Nore sweeping under the battlements of its lordly Butlers (cheers)—its ancient shrines and rising temples; not to call to remembrance the almost unparalleled list of men of eminence who have received their education in its ancient school or college—I need only mention Dean Swift, Farquhar, the dramatist; Congreve, the dramatist; Steele, the essayist; Berkeley, the philosopher; Bishop Flood, the orator; Yelverton, the Chief Justice; but I myself remember, in my early years, the renown of its spirited gentry, and its social gaiety. The Bushes, the Powers, the Beechers, the Behans, and, what is closest to my own heart, its sunny slopes and mountain summits, are allied in my mind with the nearest and tenderest memories. However, these are hardly topics for the present hour, and I pass to the more special business of the day. Upon a later occasion of these annual meetings of the Royal Agricultural Society, and especially at the last of all, which was held in Limerick, it was my painful duty to speak in rather gloomy tones of the then subsisting agricultural condition and prospects of the country (hear, hear). It is true that four successive and unfavourable seasons have preceded the present year. 1859 was a year of unusual drought, which made an inroad on our live stock that has hardly yet been repaired, and with this perished a great quantity of our manure. Then three summers of almost incessant rain followed. The crops one by one felt the unhappy influ-

ence; land dropped out of cultivation, and the last year was the worst of all. So that if we were now obliged to confine ourselves wholly to retrospect, and not to indulge at all in prospect—if we only dealt with memory, and did not consider what was due to hope—this would be the very moment of the greatest depression. But you will all remember in the sacred page how, when the Prophet stood on the ridge of Carmel, he was told six times that there was no prospect of relief in the parched earth or in the burning sky; yet, on the seventh occasion he gathered from the sight of a small cloud, like a man's hand, a prestige of the coming deliverance, which then came in the form of rain. So we, I trust, may thank God that we can read in the sunbeams which have gladdened our eyes tokens of returning plenty and recovery (hear, hear, and applause). I observed that land, under the baneful influence of the season, fell from time to time out of cultivation, and naturally the last reclaimed and the least productive lands were the first to be given up, and in the same gradation the best land was the last retained in tillage, and it is of that best land that we may now hope to enjoy the fruits under the best influence of a mended climate. And it was gratifying to me to find that it has been computed by most trustworthy persons, that if the crops of this season only equal the average yield of the last ten years, the value—supposing there should be no great disturbance in price—would exceed the value of the crops of 1862 by some ten millions of money. And if they should exceed that average of the last ten years, of course the grain would receive a proportionate increase. Amidst the general depression which affected almost every kind of agricultural produce, I find an exception in the article of flax, and I learn that this year 60,000 more acres of flax have been sown than the last ten years, or, probably, more than ever were sown in Ireland; and the activity of the linen trade, in such marked contrast with that of the cotton trade, encourages the hope that the flax crop over and above its abundance, will realize satisfactory prices (hear, hear). With respect to other crops which cannot attain that amount which the favourable nature of the present season might otherwise have secured to them, if land had not been previously thrown out of cultivation, we may hope that, whereas the sufferings of a bad year are nearly mainly confined to the year itself, the caution and resources, which are altogether best learned and only learned in seasons of difficulty and trial, will bring with them salutary permanent results (cheers). I think it may be a matter of serious reflection whether the least favoured lands ought to be restored to a more precarious crop, as I believe that lands that have hitherto been devoted to wheat would be much better applied to those grains that suit better with colder and moister climates (hear, hear.) No

lesson of the past has been more permanently taught than the necessity of continued attention to drainage, and I rejoice to find that two measures have been adopted in the last session of parliament for giving facilities to proprietors for making outlets to their drains, and for enabling them to form drainage districts to effect a more complete drainage. And I believe these two measures rest on the sound principle of facilitating proprietors in executing the works themselves, without any undue influence on the part of the government. The competition of the whole world, acting now upon us through new facilities of transit and new means of access, of which the Galway line is the last, of course continually grows more intense. The great enterprise of your neighbors, the pork merchants of Waterford, has given activity to the bacon trade, of which this city may be considered in some respects the centre, and the vigorous promise of the potato crop bids fair—for we all know the connection between pigs and potatoes (laughter)—to contribute to the further extension of the pig trade in Ireland. I believe almost the only article of food the importation of which into the United Kingdom has been diminished within the past year is butter. Now, the state of Ireland affords considerable facilities for that trade, which it has long enjoyed, and I trust that continued attention to dairy farming will carry on and advance its prosperity. I had wished almost to indulge myself in some little reflections on the processes of hay-making which I observe carried on in Ireland; but I have found my views so completely summed up in the old survey of the county of Kilkenny, written, I believe, by the father of my excellent and honoured host, Col. Tighe, that I cannot help quoting what he says, rather regretting that the subsequent amendment not has been as complete as we might have hoped. The principal faults," he says, in "common practice are drying the hay too much, and exposing it too long to injury in every way. The great object seems to me to be to prevent heating, to accomplish which the wind and rain often extract all the nutritious parts of the hay long before it quits the field. There can be no doubt that it is highly useful for the hay to heat moderately. If it is cut while the grass is succulent, and permitted to heat, the saccharine process takes place, and an additional quantity of saccharine matter—one of the most nutritious substances—is formed by combination with the oxygen; it only requires that it should not be allowed to go too far. It often happens that the hay is allowed to remain too long in the fields. It loses then in the saccharine matter, and there is also the additional disadvantage that the ground is debarr'd from the benefits which it would otherwise receive from exposure to the light and air of heaven." Such topics as the better selection of seeds, the questions of the steam plough,

the treatment of the disease of cattle and sheep, I wish entirely to leave to those better competent to offer an opinion upon these subjects, as well as upon the particular merits of the very successful show we have witnessed this day. I am very glad to perceive that among other objects which the society has cordially adopted is one institution, patronized, I am very gratified to see, by the ladies of Ireland, and by some of the highest, the fairest, and best amongst them. They have become associates of the Royal Agricultural Society for the special object of improving the dwellings and domestic condition of the agricultural population of Ireland. I am sincerely anxious that the tenements of the labourers should be made to keep an equal pace of improvement with the care bestowed on your flocks and on your herds. Looking for a moment, and only for a moment, to the general condition of the country, apart from the special province of agriculture, although the distress caused by the late inclement seasons has naturally told with great and distressing effect in the several districts of the country, yet it appears that the rate per head on the population for the relief of the poor in Ireland amounts at present to 2s. 6d., whereas the rate per head in both England and Wales reaches up to 6s. per head. With respect to that most important subject, the education of the people, it appears that in the year 1841 54 per cent. of the male population and 41 of the female could read. In 1851 this proportion had risen to 58 per cent. of the male population and 49 of the female; and in the last census, 1861, the proportion had further obtained the gratifying increase to 65 per cent. of the male population and 58 of the female. And in the county of Kilkenny, in our immediate neighbourhood, I am glad to find that while the attendance in the National Schools in 1851 was 1 in 10 of the population, in 1861 the attendance had risen to 1 in 6 of the population. There is a small item in statistics that I have ascertained, and which affords me some astonishment, I confess. In the last census of 1861 there were in Great Britain of persons 100 years of age and upwards, 201. How many do you think there were in Ireland, in not nearly so large a population? 765. That fact speaks highly for the health of the old men and old women. The only thing further I have to add to my summary of statistics, and perhaps I should consider it the most important, is that in the last year there has been a sensible decrease of crime as compared with preceding years. Now, my lord and gentlemen, I will only add that this is not a country to despond about. There are now two sets of principles and of influences at work for mastery over its future destinies. On that mountain top which overlooks so great a portion of the country, on the majestic Slievenamon, one set of those principles and influences finds its vent in shrill and ill-omened shrieks for strife, for

discord, and for the bloodshed of those who possess and those who till the soil. The other or counter set of principles breathes through such organs of peace as this and other kindred societies, of which it is the harmonising and healing purpose to spread the knowledge of useful improvement, to encourage the proprietors of the land to reside on their estates, and to take an interest in the land they live on and the men they live with, and to unite all classes and all grades, landlords and tenants, farmers and labourers, in one blessed reciprocity of good will and good deeds (loud applause, amidst which his Excellency resumed his seat).

EXHIBITION OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

The Annual Show of the Highland Society took place this year at Kelso, the first week of August. Whether regard as to extent and quality, the number of visitors, and the proceeds at the gates, the Kelso meeting must be pronounced as eminently successful, fully equal to any previous meetings of the Society, except, perhaps, in such populous places as Glasgow and Edinburgh. The *Mark Lane Express* remarks:—

The recent meeting of the Highland and Agricultural Society of Scotland, and the address of the President, furnish a fitting text for some few remarks on the agricultural progress of Scotland, to which that Society has largely contributed, by its long continued exertions in various directions—its meetings for discussions on agricultural and scientific subjects, its periodical shows, its museum, the publication of its Transactions, and various prize essays, and the labours of its chemical department under the superintendence of an eminent scientific man. The Highland Society, as regards agriculture, is, we believe the oldest in existence, having been instituted in 1784, its exertions therefore dating more than half a century before the establishment of England. It is 31 years ago since the Society held its periodical show at Kelso, and the general advance in that period has been very considerable. Steam has accomplished great things since then for the country generally, as well as for agriculture in particular. Old hands must have been astonished at the display of 1,000 implements of various kinds—at the unusually large number of reaping and mowing machines, at traction engines, the cultivation of land by steam, and the various combined powers which the steam engine has effected. Live stock and crops have also improved amazingly; and the Scottish farmer of to-day is a very different man from the farmer of the early part of the century: he has not so

much bigotry or self-opinion: he inspects without prejudice new inventions brought forward, and listens with attention to the scientific lectures of the agricultural chemist.

In the words of the noble president and chairman of the society, the Duke of Argyll, agriculture is not merely an industry or an art, but, in the highest sense of the word, a science, and as a science it is to be promoted and cultivated just as other sciences are; and, indeed, the progress of agriculture is even more dependent upon the prosperity of these societies than on the progress of the more purely speculative sciences. If scientific agriculture is needed anywhere, it is in Scotland, and the advances that have been made testify to its advantageous results. Notwithstanding a large amount of rugged soil, it has a very fine climate for many kinds of agricultural produce. The power which has been given to a man of modifying to his own use the animal and vegetable kingdoms, of creating almost, as it were, new species for his own benefit, is one of the greatest mysteries of the world.

We avail ourselves with much pleasure of the following description of the late Exhibition, from an excellent letter addressed to a city paper, by a Canadian, who was present at the meeting:

To the Editor of the Leader.

KELSO, SCOTLAND, Aug. 8, 1863.

During the past few days this town has been a scene of great attraction to all interested in Agriculture from having been again selected, after a lapse of thirty years, for the great annual show of the Highland Agricultural Society of Scotland. This Association has had a most important influence in promoting a scientific farming throughout Scotland, and was instituted many years since by the sixth Duke of Argyll, and others, as the Highland Society, with the special design of improving the condition of the Scottish Highlands and Islands. Gradually extending its operations and benefits, the Society altered its name, and embraced all Scotland within its sphere. From the great landed proprietors of Scotland the Society receives the strongest support, many of them not only contributing largely to its funds, but giving personal attention to its management and entering the lists as competitors for its prizes. While this liberal support on the part of the nobility and gentry of Scotland is an evidence of enlightened public spirit, it may also be noticed that no class has benefitted more by the progress of Agriculture than the great land owners. By means of high scientific farming landed property is made to yield a far larger return, and in almost every case the incomes of proprietors have been greatly increased. In this country influence and social position are invariably connected with landed property, and rarely attained without it, and the fact is creditable to the lords of the soil that as

a body they are distinguished by the active discharge of the many responsibilities and duties which their often immense possessions entail upon them.

The situation selected for the great show was almost unrivalled for beauty and convenience. Through the liberality of Sir George Douglas of Springwood Park, a portion of his Park, 14 acres in extent, had been obtained, lying close to the town of Kelso, and to the Railway Station. In front of the ground flows the united Tweed, while across the River may be seen Kelso with its picturesque old abbey, the ancient historical ruin of Roxburgh Castle, and Floors Castle, the magnificent seat of the Duke of Roxburgh. In parallel lines long ranges of open sheds had been erected, simple and far from ornamental in construction, but with this advantage that scarcely a nail was used in putting them up, the timbers and planking being taken down almost uninjured by the temporary use. The mode of construction was an experiment, but a most successful one, and the great ranges of sheds and buildings are only estimated to cost £1,000—a small sum when the amount of accommodation is considered. At considerable distances through the grounds were placed watering troughs with an abundant supply of that necessary article, drawn from the Tweed by a fire engine, which filled a temporary cistern of lead erected on scaffolding at such a height as to drive water through the numerous supply pipes, and also to keep running a very elegant fountain in front of the Society's headquarters. This plan of giving an abundant supply of water is an admirable one, and might be adopted with success at the Canadian shows where those in charge of animals have sometimes a difficulty in carrying it from a distant part of the ground. Ample supplies of provender for animals were sold at a building in a corner of the ground, and in the centre were refreshment booths for visitors, the prices of all articles sold being very moderate and controlled by the Committee. As compared with the splendid Crystal Palaces and out-buildings occupied by the Upper Canada shows, the Highland Society's were wanting in appearance and effect. Long ranges of low sheds, entirely open on one side, were the only accommodation for animals, the owners having to protect the less hardy kinds by canvas or blanket screens fastened up at night. For the agricultural implements a long shed, open on all sides, was the only provision, while the seeds and specimens of farm produce were little better protected. Had the weather proved less propitious than it did, a good deal of injury might have resulted from this exposure, and Canadians may congratulate themselves on the enterprise and liberality which provide accommodation so superior in almost every respect for our own annual exhibitions. It must be explained, however, that the Highland Society's show is a purely agricultural one, and confined entirely to specimens for practical farming purposes. There

is therefore not the same need for immense buildings to cover the collections of arts and manufactures, which form so attractive and useful a part of our own exhibition.

The entries at the show were as follows :

Cattle	245
Horses	127
Sheep	532
Swine	96
Poultry	(lots) 231
Implements	1,161

As comparatively little versed in the distinguishing excellencies and advantages of the different classes of animals, and, therefore, only able to give a general idea, I am unable to contrast the Kelso show with the annual Canadian exhibitions. No one, however, could examine the magnificent specimens of cattle, horses, sheep and swine, without seeing that the finest of each class which Great Britain could produce, were here exhibited. Very many of the animals had been successful at other shows, and not a few were distinguished by strings of medals round their necks, the trophies of former victories. One could not help fancying that the beautiful prize animals walked with prouder and more elastic step, and with loftier heads from some instinctive knowledge that the honors they bore distinguished them above their fellows.

In cattle, the locality where the show is held each year generally sends the largest and finest display. Thus from the border counties were, this time, exhibited Ayrshire cattle of great beauty. Fed upon rich pasture in summer, and large juicy turnips in winter, this useful variety here attains great perfection. A splendid cow exhibited by the Duke of Athol attracted great attention, attended as she was, by a bonnie Highland lass in full costume, as dairy maid.

Though not so fine in point of breeding, nor so handsome, the polled Galloway cattle appeared to great advantage. This class of stock are found admirably to answer in those parts of Scotland where the winter is trying and the food coarser in quality. They are hardy animals, yet good milkers, and are strongly recommended by Scottish judges to the attention of our Canadian farmers—by many of whom they have been most successfully tried.

From the West Highland hills came a breed hardier still, with rough coats to enable them to resist the keen winds of their native mountains. These West Highlanders are purchased lean and rough in large numbers by border farmers, readily and quickly fattened on turnips, and sold during the winter or spring for the great cattle market at Newcastle, from which London and the manufacturing districts draw their supplies. Is it not probable that West Highland stock, with perhaps a cross of some finebreed, would answer the wants of our farmers in the back towns, where want of fodder is at times so severely felt. In winter on the Highland hills they can live well, where other cattle would

starve, and in the summer or autumn they would soon fatten in the woods or meadows. Many of them are good milkers, though of course far inferior in this respect to the polled Galloways or Ayrshires.

Of horses the show was not so large, nor so attractive, by far the larger number being of the large Clydesdale breed, so useful for farm purposes, but far too clumsy and heavy for the requirements of most Canadian farmers. In ploughing heavy clay soils, in drawing heavy weights at a slow pace, these immensely powerful horses are unequalled; and the finer specimens of them are purchased for London brewers and Liverpool dray-horses. The Lowland farmer has now little need for animals adapted to road work, the network of railways bringing his coals, lime, and artificial manures almost to his door, while his produce is easily dispatched from the station. Powerful animals to work on the farm are therefore what he needs, and the Clydesdales meet the want. For other purposes the entries were not so numerous, but a few beautiful animals for hunting showed to great advantage.

In raising sheep the Border farmers have long been noted, and nothing could have been finer than the display of Leicesters. Their beautiful wool and symmetrical proportions were much admired, and afforded evidence of careful management and abundant food. From the neighboring Cheviots came many fine sheep of that beautiful variety, hardier than the Leicesters, affording better mutton, though not equal in quality or weight of fleece.

The swine were wonderful to look at, though of unwieldy size. This year the rule had been laid down that all the animals shown should be able to walk, but evidently a long promenade was not contemplated in many cases. The fattest porker at the show died suddenly towards the close from pure suffocation, not being able to stand the heat or want of air caused by the crowds of visitors who were round his stall from morning till night. The long round fat bodies, with short legs and snouts, would have delighted the eyes of fat pig fanciers across the Atlantic, but at the same time the fattest pork is not to every one the most palatable.

In case it may be thought that more praise is given to the cattle and sheep than their comparative excellence would merit, I must explain that since the admission of foreign and colonial grain free of duty, farming in this country, and especially in the border counties, has been undergoing a complete change. Unable to grow wheat at a profit, the farmers have turned their attention to cattle and sheep, and fields of green turnips to an immense extent now take the place of yellow grain in the landscape. It is from the sale of his fat stock that the farmer now pays his heavy rent, grain occupying a secondary place in his calculations. Increased care has thus been given to the breeds of stock, and the superb specimens exhibited at the show afforded

evidence of what care and attention can produce.

During the past few years a wonderful improvement has taken place in the style and appearance of farms generally. Handsome houses, many of them fitted up with every convenience and luxury, and large and capacious farm buildings are seen in every direction, while the long chimney shows that steam power is now all but universal. These farmers, it must be remembered, are men of large capital, paying rents often of £1,200 or £1,500 per annum, and in his speech at the agricultural banquet the Duke of Argyll mentioned farmers who, at the commencement of 19 years lease, and before they could receive a penny in the shape of interest or return for their capital, had expended from £5,000 to £10,000 of their own in the improvement of the soil. The small farmer with little capital has now no chance of success in the better cultivated districts, and is gradually being supplanted by those who bring capital and science to bear upon the 1,000 or 1,500 acres embraced in their leases.

The result of the show is a great satisfaction. At the doors were collected about £1,400, a larger sum than at any show excepting those of Edinburgh and Glasgow. 20,000 visitors are estimated to have passed the gates on the three days, and on the Wednesday afternoon, that being also the day for St. James fair in the immediate vicinity, 20,000 visitors paid their shilling.

The banquet was a great success, 400 gentlemen and farmers sitting down. The Duke of Argyll occupied the chair, and spoke with eloquence and effect. The Duke of Baccleugh also spoke in a very happy manner, his speech being however more characteristic of the fox-hunting country gentleman, than of the man of great information. The Duke of Athole appeared in the show ground, but not at the banquet, his sad state throwing a gloom over all his friends. This nobleman is slowly dying of cancer in the throat, his case being given up as past hope. His loss will be much felt by his tenantry and especially by the Highland Society.

But I must draw this letter to a conclusion, and pack up my trunk for other places.

With best wishes for the success of our own approaching show, and hoping that it may soon rival in farm stock, as it excels in many other respects, the exhibition in Scotland,

I remain, yours, &c.,

"VOYAGEUR."

AMONG THE SORGHUM GROWERS.

Each succeeding year has given the closest observers and experimenters increased confidence in the profitableness of this crop as one of our staples. The tendency has also been to concentrate the growth so as to be able to work it up with larger and more able machinery than

could be purchased by single individuals. Among those most extensively engaged in the business is O. N. Brainerd, of this city. His manner of operating has been to agree to put up the necessary machinery at such points as the farmers would contract to furnish a certain number of acres of cane, delivered at the mill ready for working up. A recent trip among these contractors and mills gave us the following items.

At Manteno.—There are about 400 acres contracted for from about 50 growers, and perhaps 100 acres outside of that contracted. An engine of 40 horse power is being put up at this point for working up the cane. A main building 32 feet square for mill and evaporator has been erected, with additional sheds and storage.

At Kankakee.—About 200 acres are contracted for from 15 growers, and some 50 acres are expected to be brought by railroad from Chebanse. The same sized buildings are being erected at this place, and a fifteen horse engine put up.

At Bourbonnais Grove.—There are 500 acres contracted for. The same buildings as at the other places, and engine of 20 horse power for driving the works.

Clifton.—About one hundred acres are grown and will probably be worked up at the station by a portable engine, or transported to Kankakee.

Onarga.—Four hundred acres are contracted for at this point and will be worked up at the steam mill in this village; separate buildings having been erected for the machinery.

Pera.—Five hundred acres are contracted for from fifteen growers; a 20-horse engine is put up here for driving the machinery.

Bulkley.—At this place the business is conducted by Ira A. Mauley, who has contracted for some 400 acres of cane, good buildings have been erected and a 25-horse power engine is in place to drive the works. At the place we found one field of the Imphee that was of as fine growth and even as any field ever grew; much of the remainder was uneven and would yield only about three-fourths of a crop.

The condition of the cane at all the places mentioned would give about the same yield—say three-fourths of a crop. The evaporators at all these places will be of the improved pattern of O. N. Brainerd's.

It is the calculation to boil the juice down to about 65 deg. Beaume, and then ship direct to the refinery in this city where it will be filtered and then boil in a vacuum pan. In this way it is expected that an article of sirup will be produced that will compare with any thing that is in the market; certainly it is, the quantity made will be sufficient to give our "Eastern Cousins" a taste of what we can furnish from the prairies.

Since our visit a severe frost has occurred which has injured the cane in many places we fear, severely.—*Prairie Furn.*

DESTRUCTIVE FROST IN ILLINOIS.

The *Prairie Farmer* gives the following account of a very severe frost which occurred in that state at the end of August. There was a very slight frost about the same time in this country, but it did very little, if any damage.

The Northwest was visited on the night of August 29th with one of the most damaging frost ever known. The corn crop retarded in its growth by the drouth of June and July, was not sufficiently mature to withstand the attack, and hence over a very large extent of territory has received a killing blow. The sugar cane is in like condition—perhaps not so badly damaged. Tobacco, melons, tomatoes, beans, buckwheat in fact all growing vegetation has suffered in like manner. We have not particulars sufficient, at hand, to enable us to place any estimate upon this severe loss—the extent of counties that has suffered must be very large. We regret that we go to press before the letters of a number of our regular correspondents can reach us. In another column will be found a few relating to the subject.

The telegraph brings to the city dailies, reports from many localities that we have not yet heard from. From them we gather that a severe damage has been done in Sangamon, Stephenson, Winnebago, Bureau, LaSalle, Knox, Mason, Putman, Kendall and Kane counties. We may therefore conclude that all corn, cane, &c., on low grounds is materially injured, probably half the crop of two-thirds the entire State has been cut off. So far as we can learn the damage in Wisconsin and north is not so severe as in this State; still the crops of Wisconsin, Iowa, Minnesota and Michigan are more or less injured.

Doubtless some of the reports given at the moment of disappointment will be found exaggerated, especially in regard to the corn and sorghum. But the more tender crops, like tobacco, beans, &c., must prove almost an entire failure in regions where it was most severe.

Fruit seems for the most part to have escaped with slight injury.

Next week we shall be able to present a more intelligent statement of the effects of the frost. If the injury is as great as we at this time fear, it must be materially effect prices and prospects. Let us hope for the best.

NEW IMPORTATION OF STOCK FOR COBOURG.

We always chronicle with special interest and pleasure anything which promises to improve the quality of our horses and cattle, and the advancement of the interests of agriculture, and, therefore, we gladly give the following extract from the *Bunffshire Journal*, of Aug. 4th., to our readers.

GOOD PRICE FOR A YOUNG DRAUGHT STALLION!

The fine three year old horse, with which Mr. Wilson, Durn, carried the first prize in his class, at the Royal Northern Agricultural Show, at Aberdeen, on Thursday, has been sold to Mr. Robert Copland, to go out to Canada. The price agreed upon is £200 sterling, (£1000). This fine young horse is named "*Young Comet*" he was *first* at the Banff and Turiff Show as a yearling, *first* at Aberdeen last year as a two year old, and was again *first* on Thursday. His Sire is Mr. Wilson's "*Grey Comet*," and his dam a Clydesdale mare. Mr. Wilson, it will be noticed, was, on Thursday, presented with the Gold Cup (valued at 50 guineas,) which he gained at the Spring Show with his Stallion "*Eclipse*." "*Eclipse* is half brother to "*Young Comet*," and is after Mr. Wilson's famed horse "*Emulator*."

Mr. Copland who is a nephew to Mr. P. B. Wright, of this Township, returns to Canada to Farm, and in all probability will settle in this neighborhood. Along with the Horse he will bring a young Clydesdale Mare, of famous descent, several of the *prize* Ayrshire Cattle from the "*Kelso*," "*Highland and Agricultural Society*" show, and Leicester sheep from the flock of "*Brayden, of Mudlaw*." Such stock coming into Canada, we have no doubt our agricultural readers will hail as an enterprise deserving every encouragement. There is no doubt whatever that if they arrive safely, a great boon will be conferred on the County of Northumberland. Already possessed of the Provincial *prize herd of Ayrshires*, when these noted animals are added to Mr. Wright's unbeaten Cream Pots, we will trust the agricultural honors of Cobourg in his hands without prejudice in favor of any breed of cattle. We see clearly from the marked progress of the Ayrshires, both here, in Britain, and especially gaining in France, that they are rapidly gaining the confidence of the agriculturist. Who can help believing that in Canada especially, there is a peremptory necessity for another source of profits from our cattle, than barely the selling of the carcass at 3 and 4 cents a pound? We want butter, cheese and milk, and a cow which after having paid in these at 100 per cent profit, will yield beef equal to the "*Killos*!" Such properties are claimed for the Ayrshires, and we heartily wish Mr. Copland and Mr. Wright, every success in their hazardous enterprise.—*Cobourg Star*.

THE COST OF A BUSHEL OF CORN.—The Chester County (Pa.) Farmer's Club, in discussing the question—"What is the cost to the farmer of a bushel of corn?" showed that the cost of that grain in Pennsylvania is less than we had supposed. The Treasurer said that his corn last year cost 28 $\frac{3}{4}$ cents per bushel, after allowing 6 per cent. for interest on the land. The average cost of his corn crop for six years previous to the last, was 22 $\frac{1}{4}$ cents per bushel, and the

average yield $58\frac{3}{4}$ bushels per acre. Another member said the average cost of his corn for the last five years was $24\frac{3}{4}$ cents per bushel, and the average yield $56\frac{1}{4}$ bushels per acre. His farm was purchased five years ago for \$110 per acre. Of eleven estimates made, the highest was $28\frac{3}{4}$ cents per bushel, and the lowest $21\frac{1}{4}$ cents, make an average cost of $25\frac{1}{4}$ cents. The *selling price*, taking ten cases together, was $75\frac{1}{4}$ cents per bushel, leaving a profit of $30\frac{3}{4}$ cents.—*Boston Cultivator*.

CULTIVATION OF TEA IN CALIFORNIA.—Mr. H. B. Sontag, near San Francisco is trying the experiment of cultivating tea. He has a thousand plants of this year's growth, raised from seed obtained in China. California is adapted to most every kind of agricultural production, and probably the tea plant will thrive there. Three or four years must elapse before the leaves will be suitable to pick, and the success or failure of the experiment determined.

THE WINE PLANT.—We see by the *Illinois Farmer* that our western friends have been slightly humbugged in regard to a new agricultural production called the wine plant, which, according to those interested, was to bring untold wealth to the producers. Thousands of plants were disposed of, and as a consequence thousands find they have made a large addition to their stock of *rhubarb*.

The Dairy.

ON BUTTER MAKING.

EDITORS OF THE CANADIAN AGRICULTURIST—GENTLEMEN.—I am obliged by your sending a copy of the August number of your Journal, and am glad to find several articles on the Dairy.

The article on the Relation of the Food of the Cow to the Milk, is one of much importance, for although a poor ill-bred cow will perhaps, under the most judicious feeding, never produce good milk or plenty of it, it is equally true that the produce of a really valuable animal, may be increased in quantity, as well as in quality, by care being taken in the selection of the meat.

The writer on Milk has evidently thought much on the subject and it would be conferring a further favor, if he would now give the public his views on the management of that delicate article, from its being drawn from the cow till converted into butter and cheese; as much that nature produced in a perfect state is marred by the ignorance and carelessness of man, and milk is not an exception.

The short article on the treatment of the cow is well worth the attention of the dairy farmer; too little attention is given to them in this country, and suppose it is much the same in

Canada; the cow's paradise is in Holland and Germany, there they are curry-combed till as sleek as a race-horse and every attention given to their cleanliness and comfort, no doubt the calculating Dutchman finds this to his advantage.

The ten rules on butter making are about the most concise I have seen; the writer evidently is a "practical man," and may perhaps from long experience make a fair article of butter; however, for those who really want instruction a much fuller account than this would require to be given, of the management of the milk and cream, and temperature during churning; the frequent use of the thermometer would be found more useful than the crooked sixpence that is sometimes put in to charm the churn. The time for churning, 40 to 50 minutes, is much too short: when the churning is carried on rashly, or the cream too much heated, either by churning or admixture of too hot water, the butter gets too soft, and of a white colour.

There is much difference of opinion about the washing of butter when taken from the churn. When butter is to be "cured" it is thought by some that in place of steeping the butter in fresh water, it is better to work out the butter-milk into cloths which are occasionally wrung dry. I have also been assured, that the use of brine for cleansing the butter after churning is preferable to pure spring water; either of these modes it is thought retains the fine flavour of the butter, which is apt to be bleached out by fresh water. Mr. Adam has a salutary dread of lime in hard water, but is he quite sure that he is not mixing lime with the butter with the salt he uses? Most of the common Cheshire salt has lime in it, hence one reason of the non-keeping of butter in our day; formerly Scotch salt made from sea-water was procurable now such a thing cannot be got, for the simple reason that it cannot be made to compete with the Cheshire salt.

If the writer would inform the readers of the Journal why more salt should be used when the butter is soft, then when it is hard, it might be useful; he may have found this in his experience, but I do not think it is known here. As taste varies so much I should think salting in that way would be very unsafe, a rule in this cannot be too closely followed, the great point is first to know the taste of the market to which the butter is destined, and then in no case to exceed the required quantity.

The great drawback to Canadian butter is its excessive saltiness, it is not the great quantity put in that preserves the butter, a proper quantity of "pure salt" applied as soon after churning as possible is what is wanted; the difference in the price of first and second class butter in the British markets has become much greater of late years than it formerly was; the market premium on success in the attempt to make first class butter is now little less than 20 per cent, with such inducements before them it may be

supposed our enterprising Canadian butter curers will not relax in their effort to improve.

I have been recommending the use of St. Ubes "bay salt" as it is called, but the chrystals are so large and hard that it is very difficult to get them into powder either by grinding or pounding, besides, this salt from being made by the action of the sun on sea water is not so pure as it would require to be, but then it is free of lime; various experiments are now being made here, both by salt manufacturers and butter curers to improve and test its quality and if successful I will let you know in a further letter.

W. MN.

Leith, Scotland, 27th Aug., 1863.

Veterinary Department.

HOW TO BUY A HORSE.

In order to make a thorough examination, it becomes necessary to consider the height and condition of the horse, not only in the stable, but also when led out of the stall, and outside the stable; in a state of repose, and in motion.

Horses are measured with tape and rule. The tape measure is somewhat deceptive, as a low horse, with a well rounded, fleshy shoulder, may measure as much as a taller but thinner animal. The rule is, therefore, to be preferred; this is a simple stick, with a short, movable arm, at right angles; the long part is divided into inches. To measure a horse correctly, it should stand perfectly level and care taken that the seller practises no tricks, such as putting the forearm on higher ground; chucking it under the chin, to make it hold up its head, or even grasping the mane from the opposite side, apparently for the purpose of noticing the measurement. Notice should be taken, also, whether the horse is shod or unshod; whether the shoe is high or low. To secure a good span, the height of the head should be observed; also position and movement of the crest (neck). A good match as to colour is of less consequence than a similarity of temper. The examination in the stable is a delicate matter. A horse which lies down, and on being called, does not rise quickly generally suffers from bad feet; a tired animal stands on two or three legs, and is apt to lean its head against the manger; this, however, is the case also with lazy horses. Crib-biters are easily found out, if the seller has not smeared the crib with soap or grease.

Perfectly sound and, kind horses look at persons entering the stable pleasantly and fearlessly, and not unfrequently neigh. Tricky ones lay back their ears, snort, and snap. Shy horses always act timid and frightened. Slow eating and difficult, audible swallowing are signs of trouble in the gullet. Biting of

crib and halter, also drawn up belly, betoken animals that feed poorly. Worms in young horses are easily detected; the animal thus affected rubs its muzzle against the crib. Horses affected with the staggers take large quantities of hay out of the rack, throw it down, eat it slowly and at intervals, seemingly listening as if surprised. They keep their food in the mouth a long time without swallowing it, and have a dull, fixed look; they also push their heads against the wall, or into a dark corner. It is an often practised trick with dealers to drop some oil into the ears of such horses, or a little cayenne pepper applied to the passage to make them look attentive and spirited. Broken-winded horses have a short, dull cough, with a double beating of the flanks.

Are the horse's feet on a level, and one hip higher than the other? then he is one-sided. If perceptible in any other position, it must be the result of disease in the muscular part of the croup.

Stiff hair in the tail, and bare places on the same, indicate itching; sore spots, suppurated sores, or scab, betray the scab. Horses with visible or invisible spavin are loath to step from one side to the other. Windgalls seldom impair the usefulness of the animal.

Clap in the sinews betrays itself through swelling and pain in the tendon, hindering the horse from stepping firmly, which ultimately results in a stiff foot.

The mallenders, appear mostly in the hind pastern joints, are recognised by more or less deep cracks and sores, emitting an unpleasant bad-smelling fluid. This sign distinguishes it from wounds caused by over-reaching. Neglected cracks, with warts covered with stiff, bristly hairs, are the indication of malignant mallenders known under the name of crown-scab. The hinder hoofs should be well examined, particularly the coronet, to see about wounds from striking. Look well at the frog, to see if there are any ulcers or cancer; the latter disease may be considered incurable.

The examination of the horse, outside the stable, relates particularly to eyes, muzzle and nose. The contraction and expansion of the pupil of the eye deserves special attention. Amaurosis may be recognised by an immovable pupil, and a beautiful black colouring of the eye.

Albugo may be detected by a speck of a white or mother-of-pearl colour in the eye, or a turbid look of the same. Closed eyelids, with inflammation and watery flow, are mostly the cause of some hay or dust, or even of whip-cuts, and seldom dangerous. The last-mentioned cause is frequently adducted by unprincipled horse-dealers as a pretext to conceal more dangerous evils; and the utmost caution is needed. Slight inflammation and dimness of the eye result sometimes from the

shedding of the teeth. Is one eye smaller than the other? it indicates impaired or lost sight. Wrinkles in the upper eyelid betray a weak sight. Periodical inflammation of the eyes may be recognised by the peculiar position of the inside corner of the eye, continuous slight flow of tears, hairless shiny spots below the eyes, and shunning the light.

Next in order comes the examination of the mouth. Finding out the age, but be not deceived by artificial marked teeth. Often the dealer likes his horse to seem older than he really is, which he effects by drawing two milk teeth, thus making the horse appear one year older. If the fore and middle teeth appear badly worn, it indicates a crib-biter. Knots on the lips, as large and larger than peas, betray farcy: also knots and stringy swellings on the throat, the ribs and the inner part of the hind leg. The nose and the throat deserve careful looking into. A greenish yellow or whitish flow, from one or both nostrils, more or less swelling of the glands of the throat, and a cough, with expectoration of phlegm, shows the strangles. Suppuration of the glands of the throat results from the same cause and is not dangerous. A sticky, ash-gray flow from the nose, and milk white membrane, with a hard, moveable, and almost painless appearance of the glands of the throat, are bad signs; but if at the same time there are ulcers on the inside partition of the nose, then it is a complete case of glanders.

Dishonest dealers clean nose and nostrils, put oil or fat inside to produce an easy flow, and prevent the hardening of the same. They also employ caustic to produce a healthy appearance of the glands.

The examination of the horse out of the stable should both be in a state of repose and action. A healthy, lively animal breathes, on coming into the air, easily and with open nostrils; while a wind-broken horse breathes with widely extended ones, making a most singular motion with the same. Horses thus effected are exercised before the sale, which improves their breathing. Dropping or hanging the lower lip is a sign of prostration. Mettlesome horses are apt to hang their tongues out. A touch with a hot iron is the rogue's cure of this fault.

After having carefully examined ears, gullet, crest and posture of the head and neck, the mane, chest, withers, shoulders, forearm, knee, shank, pastern and hoof, lift his fore-foot to look at the sole, and also to find out whether the horse can be shod; and proceed likewise with his hind legs. Look also at the spot where the animal might have been bled, or had application of an issue, on head, chest, belly and throat.

Lifting the hoof, stepping (or reaching), and putting the foot down are three actions which should take place at the same time,

regularly, vigorously, and quickly. Horses with lame withers or shoulders cannot lift well the leading fore-foot, and are not sure in the act of reaching. A bad hoof is seen in the incomplete act of stepping and treading. The tread of a horse with the staggers is insecure and heavy. Avoid horses that strike the fore-feet with their hind-feet; those that throw their fore-feet outward too much; those with too fleshy hock; and those that interfere or kick. Aside from all that has been said above, it is of the utmost importance that the buyer should always bare in mind for what purpose he wants to buy a horse.

Stiff horses are improved by exercise, prior to the sale; lame horses are exhibited on soft ground. Lazy animals, or stupid and inattentive are made active by the sound of the whip. Common or even cayenne pepper is introduced into the passage, to make the horse carry his tail high, and improve the position of the croup. The latter trick may be discovered if the horse passes dung frequently during the examination. Gray hairs over the eyes of old horses, light spots, and even the feet are dyed, which trick can only be found out after the horse sheds its coat. To guard against all the tricks of the trade requires a knowledge of the outward appearance of the horse, as well as its anatomy and physiology, to which may be added pathology; and no connoisseur or veterinarian should be without these qualifications.—*Horse Owner's Guide.*

IRRATIONAL CUSTOM OF APPLYING BANDAGES AND KNEE-CAPS TO HORSES.

To point out bad customs is to make one step towards the introduction of good or better methods of practice, and is, perhaps the most certain, though indirect way to effect good. The custom of bandaging horses' legs has gone on increasing until it has reached the extreme bounds of absurdity. The most valuable of our horses are those the most exposed to the custom. Bandages are of various kinds: flannel and linen are used in the stable and on other occasions when horses are at rest, whilst other material is often applied when they are in work. To ask a reason for bandaging would be to solicit an answer in no way tending to enlighten one. By different people, all manner of excuses will be given to explain the *modus operandi* of bandaging, for the very good reason that no one rational explanation can be found. Bandages, we shall be told, keep horses' legs warm; they are also said to cool the legs, make them look fine, save labour—viz., hand-rubbing. Then the various elastic bandages, acting by comparison, are thought to sustain, and also defend from cutting. The above are only a few of the apologies ready to defend the

custom of keeping horses' legs tightly bound up in swaddling clothes

As to knee-caps, they are almost as customarily used now as the bridle, or any other essential thing amongst stable equipments. If horses go to exercise they are knee-capped; if they are taken to be shod, the same; and if sent a journey on foot, by rail, or the sea, their legs, are benumbed by knee-cap constrictions. Knee-caps must be endured; and, to be kept in position under the varied movements of the leg, they require to be buckled so tight as almost to stop circulation in the limb; which would certainly be the case but for the wonderful provision of nature in so bountifully distributing the blood-vessels which keep up the circulation in the foot. But for these provisions the loss of a foot, or even a part of leg, would be common occurrences amongst horses. As it is, though these extreme consequences are rare, the writer has seen a case, in a valuable horse, where mortification in one fore leg resulted from a tightly applied bandage.

A few words on the use of bandages, to deny the value of which would be to under-estimate one of the main resources in surgical art; but there is a wide margin between use and the abuse to which we are directing attention—water dressings with the nicely applied bandage, which by easy compression effects a given required purpose: these are of great importance. Then, again, in the management of race-horses and hunters, bandages are of use when applied so as not to constitute an abuse; for instance, when such horses return to their stable from hard work, nothing is so effective and refreshing as the process of cleaning them, by properly washing the legs over knees and hocks, as is done by placing the horses' foot in a pail; after which the sponge should be assiduously applied to remove the water. Then they should be rubbed with a wash-leather or clean straw, and afterwards woollen serge bandages should be even and not tightly applied from the feet to knees and hocks. This is sound practice. Thus the horse is put into comfortable—viz., a salutary state. The groom then proceeds to finish dressing him over his head and body—which will take from twenty minutes to an hour—when the bandages should be taken off, and the legs rubbed with dry straw, linen cloths, hand, or alternately of all these; and if the stable be clean and properly ventilated, the animal will be in the best possible state to speedily recover from the fatigue, and to be fit for work again.

Whilst pointing to this use of the bandages we are not sanguine of its being preferable to rubbing the legs dry, only that time is economised, which is an object gained, favourable to the groom of some otherwise required labour. We agree in all the uses of the bandage, both as an agent in the hands of the veterinary surgeon and for the contemporary application, as above shown, in stable management; but would no

more allow horses to stand muffled up during the whole night, or any considerable part of a day, than we would go to bed with worsted stockings on our feet and legs.

It should be needless to say much more about knee-caps; it might be thought, looking at the bolstering up customs, that the horse was the most infirm and unsafe of all quadrupeds, or even bipeds, instead of being the most agile, powerful, and beautifully formed, as he is.

A late friend of ours used to say, "You may tell the measure of a man's brains by looking at his boots. Now, if we try the test by the way people manage their horses, their feet and legs especially, the results will be startling; some apply leather soles and tar to the bottom of their horse's feet, and then jam and nail the whole down under an iron shoe; then they begin and bandage, which process consists of flannel passed several times round from the horses' knee to the hoof; and then, as before said, on frequent occasions, above all these the knee caps are strapped round, acting like an imperfect tourniquet.

Oh! if the poor horse could speak, what would he not exclaim against his tormentors? It never enters the mind, or at least the subject has not been recognised, so as to lead people to understand that a horse's feet perspire, that legs also, like the whole surface of his body, exhale and breathe every instant during life; and yet he is treated somewhat analogous to the placing of his legs in boots impervious of canvas, with a pitch plaster for the sole, and an ill-adapted iron rim to tread upon. All the rest is left to chance, and when the horse becomes lame or sick that goes to the chapter of accidents.

One thing against immediate amendment in these evils is that they are young compared to some others, and may be considered as yet on trial. In the meantime, these observations will be in readiness to receive consideration.—*Cor. of Scottish Farmer.*

CURE FOR SCOURS IN CALVES.

MESSRS. EDITORS.—A few weeks since I noticed in the *Co. Gent.* an article on "Curing Scours in Calves," in which the writer argued that the correct way to cure the complaint was to doctor the cow instead of the calf, as the milk being in an unhealthy or unsuitable state, caused the difficulty, and that certain ingredients given to the cow would correct and regulate the condition of the milk, and cure the complaint in the calf. Now this theory may be true, and the reasoning correct, but it appears to me that the difficulty is more likely to be in the unhealthy state of the digestive organs of the calf than in the cow, and that suitable remedies given to the calf would be more likely to effect a cure than if given to the cow.

At the time I saw the article referred to, I had a calf that I was fattening, but it would

scour badly if allowed to suck what milk it wanted. I tried to stop the complaint by giving the calf only a small allowance of milk. This helped the difficulty some, but did not cure it. Being in the stable with the calf one day, thinking what I should do with it, as I was satisfied it could not be fattened in the situation it then was, it came up to me and commenced licking the dirt off from my boots. This circumstance led me to think that this might be the remedy that the natural instinct of the calf prompted it to obtain to regulate its system. I then went and got a turf of fresh soil and grass, and placed it before the calf, who instantly began to eat the dirt and roots of grass. The turf was left in the stable where the calf could eat from it when it chose, and in two days it was entirely cured of the scours. Immediately after I let it have all the milk it could take till the time it was killed, during which time no recurrence of the disease took place, and the calf appeared well in all respects. No other remedies were given to the calf, and none to the cow.

Every person who has had the care of cattle has probably noticed with what avidity they will eat fresh dirt when they have been kept away from the ground for sometime, and this fact shows conclusively that this is one of nature's remedies which their instinct teaches them to obtain to keep their digestive organs in a healthy state. Salt, chalk, &c., are things which they seek for, for the same purpose. When they are deprived of these things they often suffer in consequence of it.

I do not wish to convey the idea that all diseases may be prevented or cured by furnishing them with these things, but I think that if those who have the care of domestic stock would carefully study their nature, and observe what their instincts induce them to obtain, and place within their reach from time to time those things which they desire, their stock will do much better, be more healthy, less liable to disease, and better able to withstand the attacks of disease than when these things are disregarded and their stock neglected.

As a general rule I think that "an ounce of prevention is worth a pound of cure," in the treatment of many of the diseases which domestic animals are liable to, and that in many diseases, if at the commencement some simple remedies are judiciously applied, the cost of expensive drugs may be saved, and frequently the loss of life prevented. C. T. ALVORD, *Wilmington, Vt.*, July, 1863.—*Country Gentleman and Cultivator*.

TO REMOVE LICE FROM COLTS.—Take one pint of lamp oil and apply to the animal from the top of the head to the roots of the tail, along the back bone, and on each side of the back. It can be removed by soap suds.

Miscellaneous.

THE INTERNATIONAL DOG SHOW.

On Monday sen., at the Agricultural Hall, Islington, commenced the most successful and the largest show of dogs ever witnessed in this country. The Prince of Wales and his Princess began the week visiting it, and the example brought all the pride and beauty of the west in its train. Throughout Monday afternoon and Tuesday, a half crown day, a stranger might have judged Islington to have been a fashionable quarter, by the splendid equipages which abounded in the locality.

The Royal party remained in the building for a considerable time, and the Hon. Col. Hood attended on Tuesday to convey to the directors the expression of their satisfaction.

The dog has not unaptly been described as a gift of Providence to man—an aid almost indispensable for conquest and management of the lower animals. He is our friend and companion, uncalculating as regards his own comfort or convenience, and staunch in his fidelity, following his master through all shades of fortune. Unlearned in virtue, the dog, from the promptings of his own feelings alone, practices the most perfect integrity. A long course of domestication and peculiar treatment have, as is well known, divided the canine race into nearly a hundred varieties, all less or more distinct as respects size, appearance, and special qualities and dispositions. He is a character in the book of natural history which well deserves the attention it receives. There is something unnatural in an aversion towards a race which have such representatives as Argus, that faithful hound, which, through the strange vicissitudes of twenty years, cherished a remembrance of his absent master, and was the first to know "his lord"—

..... "He knew and strove to meet;
In vain he strove to crawl, and kiss his feet."

—at Montargis, which belonged to Aubry de Montdidier, and discovered to Charles V. the murderer of its master; as St. Leger's greyhound, which visited him daily for four years while he was a prisoner at Vincennes; as that faithful wolfhound, whose tragic death is told so touchingly in the ballad of "Gelert's Grave;" as Sirrah, who immortalized himself by performing that memorable night's work for the distracted shepherd, James Hogg, and saved a whole flock of lambs which he thought hopelessly sacrificed; and as those many spaniels and Newfoundlands who have saved the lives of children and of sailors near the chill terrors of a watery grave.

All this veneration for the breed (the Egyptians held it sacred) is easily put to the test, however, at Islington. The incessant cry of

nearly 2,000 dogs in an echoing building is rather a difficult trial to bear. One is helped to endure this annoyance by the entire absence of another, that of smell.

The arrangements are exceedingly good. The sporting or field dogs occupy the ground floor, and the galleries are given to all dogs not thus classed. The former are accommodated upon low platforms running lengthwise of the building, and extending round to the back beneath the orchestra. These platforms are ranged back to back with a boarded division between, to which the animals are chained, and littered with straw. The promenades are broad enough for any dress that Fashion may import in her carriage from Belgravia. Kennels have been improvised for the foxhounds, harriers, and beagles, which, owing to the use of a large meshed iron wire, have a light appearance; one of these, containing the famous pack, hunted in France by the Duke of Beaufort, occupies a post of honour in the central part of the arena.

"The English foxhound of the present day is a perfect living model," says a celebrated writer on dogs, "and how he became such it is in no man's power to determine." A century and a half ago there was no animal resembling the present breed of foxhounds; when hunted at all in Great Britain, the fox was hunted by a dog resembling the Welsh Harrier, a rough-haired, strong dog. The improvement in our horses, and the mixture of the blood from the race-course with that of the old-fashioned hunter, has out-fashioned the hound which used to "hang" upon the scent, and produced an animal which will suit the run of our hard-riding modern sportsmen, by "carrying a head." Such are Lord Fitzharding's stud dog Cromwell, Mr. C. F. Colmore's Royal, also his three couple from a pack hunted last season. The heads are moderately small, the fore legs straight as arrows, the back ribs, or "spur place," deep, the hocks well let down, and the chests roomy. As a rule, they are of a small size, though for a country which "carries" we fancy Mr. Villebois's taller animals have a better chance. Some of these we believe to stand 26 inches, or about 3 inches above the general height. Four couple of staghounds, a sort of mongrel bloodhound, of the old New Forest breed, attracted a good deal of attention. They are from the kennel of T. Neville, of Chelland, Hants, and although not possessing the symmetry of the English foxhound, are fine, majestic animals of their kind, and unerring in their scent. They are a heavy breed, black and tawn in colour, with pendant ears. The Harriers were well represented. His Royal Highness the Prince of Wales, J. Saxby Esq., and the Right Hon. Earl Brownlow were amongst the exhibitors. George Race, of Biggleswade, won with his three couples. The beagle, a hound that dwells too long on

the scent for modern habits, and is, therefore, getting neglected for swifter breeds, was not in great force.

The bloodhounds were splendid and numerous. Their awfully deep but highly sonorous tongues could be heard beyond and above all others. These modern representatives of the breed are rather deficient in the wide forehead, expansive nostrils, lips, and long, smooth, pendulous ears, of from 8 to 9 inches in length, of a former breed, but they are swifter than their ancestors. They are generally about 26 inches in height. Some of these dogs can claim alliance to the Duke of Bedford's breed, as Mr. Boom's Welcome. The pedigree of the Duke's dogs can be traced back for 300 years. Mr. Forster's Forrister and Mr. Stephenson's Baron are splendid animals. And we must not omit Mr. Best's Juno, by Mr. Ausdell's Lion. The colour for the most part is black and tawn. They are not often found except in the neighbourhood of a deer park, or in possession of "Associations for the prosecution of felons."

Of otter hounds, a breed of dogs fast disappearing, the show was confined to about six specimens of this rough-haired, large-looking terrier breed. Of some the colour is tawn and black, and white and tawn. The Hon. Rowland C. Hills Priestess and Barmaid were the approved specimens.

Of the deerhounds there were 38. Mr. Cridge's grizzle dog Oscar won the first prize; the Earl of Stamford and Warrington's Bran won the second: both are valued at £100. Mrs. Walbrey showed Bear, a great grandson of Sir Walter Scott's Maida. Another Oscar, Beresford Hope's, claims special notice for its beauty.

Amongst the foreign hounds were two exhibited by the Duches of Manchester: Sultan, a Russian Wolfhound, a very tall dog, with long head, terrific mouth, black and white skin of flossy silk, but withal a pleasant expression; and Juba, a North German boar hound, to which the first prize was awarded. There was a German otter hound, smaller and smoother than the English; a Polish wolfhound, black, resembling Juba, a very "American dog," raw-boned, gaunt, and leggy; a black and white boar hound, with square form, Cuba, a slave-hunter of bloodhound mould.

The Monster dogs of any breed proved very attractive, particularly Lion, an African slaver, fairly bred; a noble black and tawn Tartar dog; Season, a slaver, highly commended; a Russian retriever; and an awful black brindle sour looking monster, with two sinister green eyes.

Surely there never was such a show of greyhounds, and it must be no little satisfaction to be a winner in a collection displaying such high merit. The hall contains nearly 100 of this breed. The blood of Figaro, King Cob,

and Snowball, the Emperor, Bugle, and Dusty Miller goes to produce much of the beauty ranged upon the platforms accorded to this much improved race of dogs. Some measure 28 inches. The Setters are exceedingly good. Amongst the pointers there is nothing like Mr. Newton's Ranger, whose *cartes* are selling at 1s. each, although the show is superlative and large. The judges in this and other classes for dogs engaged in field sports, except harriers and foxhounds, namely, the Earl of Suffolk, Lord Suffield, Lord Bury, M.P., Col. Leslie, M.P., George Moore, Esq., and Messrs. Ker, Randel, Wentworth, and Marshal, must in this first prize have experienced considerable difficulty in making their award. It must have required some nice discrimination to do justice to the varying claims of some 194 animals. Opinion seemed to run rather in favor of the small than of the large breed. The class of setters was also fine and large. Mr. Bayley's Bob First, a white dog, with tan head and flossy skin, was very beautiful; also Mr. Dixie's black and white Bounce; Mr. Dodd's Spot, a most intelligent white and tan. Of the black and tan variety the show was good, and the braces of puppies were very pretty. The Irish setters won general commendation, particularly from those who are won by the affectionate look of a dog.

The retriever, a universal favourite, was represented by 148 specimens. Besides the prize animals, we specify Lord Berner's Nero, Mr. Turner's Sailor, Capt. Copathy's Drake, Mr. Griffin's Charlie (a glorious playmate for children), Mr. Hill's two Jets, one a great prize-taker, a fine fellow, with close curling skin.

The spaniels and clumbers, a curious looking breed, with large heads, huge limbs, projecting elbows, long, flossy hair, white or white and tan, and long ears, made a good show.

Beneath the orchestra were cages where bitches, selected from all these breeds, displayed the pleasures of maternity, and suckled their young or tumbled them about, as the case might be, to the great delight of crowds of admiring people.

The galleries, as we have before said, were devoted to dogs not used in field sports. Each gallery gave space for four lines of dogs, with ample room for the circulation of visitors between the platforms.

The sheep dogs form a very intelligent class. Mr. E. Greaves's Yarrow takes the lead. He looks much like the celebrated Yarrow, tried at Edinburgh some years ago for preferring obedience to his master, who was a sheep-stealer, to obedience to the law, and got hanged for it.

Amongst the mastiffs every one stops at that princely fellow named The Governor, Mr. Lukey's, a fawn coloured dog with black muz-

zle. One natural y recalls the old story of Sir Harry Lee, saved from assassination at the hands of his Italian valet by the favourite mastiff, who in spite of all opposition had secreted himself beneath his master's bed. A full length portrait of Sir Harry, with the mastiff by his side, and the words "more faithful than favoured," is still preserved among the family pictures. Mr. Hamburgh's Duchess, connected by matrimonial alliance with Mr. Audell's Leo, is a formidable and magnificent animal, so also is Mr. C. C. Layard's, a light tawn, with black muzzle.

One class devoted to foreign mastiffs and watch dogs of any kind contained some wonderful creatures, one or two possessing a striking approach to, or perhaps it would be best to say scarcely any remove from, the wolf.

The Mount St. Bernard breed mustered in great force; at least, there were 19 entries. Most of the dogs were of a red tan colour, with black muzzles. The class as a whole wore a let-me-alone-or-I'll-bite-you aspect, though a general air of benevolence shone through their savagery. This race of dogs exhibit the way in which special faculties are inherited. Their power of tracking footsteps does not show itself before the snow falls, when it seems suddenly to be aroused, even by those dogs which are in England, and which have never known an Alpine winter nor Hospice duty. Mr. Fyler's Thun is certainly the most splendid specimen we ever saw.

The class of Newfoundlands was, of course, a great attraction to all lovers of the canine race. Their stately forms, sage bearing, and benevolent heads, procure them not admirers only, but lovers. Ladies and gentlemen were coaxing, nay, some were fairly hugging, these curly-coated favourites. Mr. Bowles's Leo, a black dog, Mr. Fisher's Pompey, Mr. Wright's Rover, were all three extremely fine specimens. Probably all these animals have so endeared themselves to their masters and mistresses that when they die they will be mourned as real friends. Who could, without deeply feeling the loss, be called upon to part with such a dog as Mr. Tolly's Neptune, a splendid black fellow, with white shirt front? In that case the words of the pathetic Byron might be adopted:

"But the poor dog, in life the firmest friend,
The first to welcome, foremost to defend;
Whose honest heart is still his master's own,
Who labours, fights, ives, breathes for him alone;
Unhonoured falls, unnoticed all his worth,
Denied in heaven the soul beholds on earth."

To mark a friend's remains these stones arise;
I never knew but one - and here he lies."

The bull dogs have a large class of admirers; they are affected mostly by a class of men who hold about the same relation amongst men as the dogs do amongst their own species. The

only redeeming point about them is their pluck and intensity of purpose, which is a quality which always makes itself respected, as was shown in the case of Tom Sayers, who, in spite of his abominable profession, won the loudly expressed acclaim of the country. Bulldogs proper were divided by weight, those over and those under 20 lbs. being considered separately. The bull terriers, a large class, were similarly divided, as over and under 10 lbs. The uglier the animal the greater the chance of the prize. Of black and tan terriers, over and under 7 lbs., there was an endless show. The smaller ones were very beautiful, some were valued at exceedingly high rates, and many were established, like the toy dogs, in most luxurious apartments. One slate-coloured morsel of perfect symmetry, belonging to Mr. Higgins, named the Blue Prince, and valued at £1,000, very much surprised some visitors by giving tongue, which much resembled the sound of a cracked silver bell. The Skyes were wonderful, both for number and breeding. Pepper, Quix Topsy, Sugar, Charlie, Monkey, Dandy, Celt, Jim, Dan, Sancho, Plin, Jessie, Flo, Sandie, Trousers were repeated in different size and colour, but with the same quaint, long body, and covert eyes, all up and down the platform devoted to the class, times without number. The Dandy Dinmouts seem to have become very popular. Of course we find Peppers, and Mustards, and Dandys, and Whiskeys, and Topsy without end in this diverting class. Were the history of these rough-coated little fellows written as Scott wrote the history of Rab and his friends, and of "our dogs," and as well written, what a charming addition should we have to our canine biography.

The Italian greyhounds are worthy of great admiration for their exquisite beauty. Mr. Burke's Sophy, in a glass-case, which she occupies with two large silver cups, won at former shows, possessing marvellous perfection. There are 12 specimens, of which Mr. Hanley exhibits five. The King Charles spaniels nearly all reside in glass-cases, sleep upon velvet cushions, and drink out of tumblers. There are some very pretty creatures, but most of them seem afflicted with some nose or eye affection, and for all purposes for which a dog is to be desired, one of the Dandy Dinmont breed seems to be worth a dozen of them. Messrs. Mandeville and Gilbert's Blenheim spaniels are beautiful creatures.

There was scarcely a chance of seeing the toy terriers for the bonnets which crowded round them. Thirty or forty of them were to be found under 5 lbs. weight, and tended with the greatest luxury. They ranged in price from £5 to £100. The prettiest lot was that exhibited by Mr. Barton, of Minnie, Topsy, and Rose, black and tawn, occupying separate compartments in one cage. There were

also prizes offered for dogs under 3 lbs. weight, and a class of 8 former^s.

The Pomeranians were well represented by 18 specimens, some of which were valued at £1,000.

The poodle, a dog which, under M. Leonard's tuition, was made to talk, was not well represented. Of the Japanese there were several, one, Mr. B. D'Almella's, valued at £2,000.

The Esquimaux, a tawn, and tawn and white breed, with a good deal of the wolf type in look and manner, was well supported. Of the Dalmatian or plum-pudding breed, formerly used to follow carriages, there were several species; also of the Maltese, a breed resembling the Dandy Dinmont, with long, woolly hair. In this class was Mr. Mandeville's Fido, occupying a case filled with silver cups and gold medals, a little creature, covered with white, flossy hair. This favourite's portrait was selling rapidly. Beyond these there were Greek and Manilla terriers, Silician dogs, Pugs, Indian, Australian (like a large fox), Chinese (white brindle and slate colour), Brazilian dogs, and a large class comprising various, in which were classed all the dogs that could not be otherwise disposed of.—*Gardener's Chronicle*.

THE HORSE-CLIPPING MACHINE.—Among the many ingenious contrivances to be seen at the Smithfield Cattle Show, in the New Agricultural Hall, will be a novel piece of mechanism invented by two French gentlemen, Messrs. de Banat, which bids fair to outstep even the sensation cow-milking machine so much wondered at in the Great Exhibition at Kensington. This is another instance of the great labour-saving principle which seems to tax the brains of all inventors now-a-days, realised in one of its happiest and most successful applications.

The instrument itself is as nearly akin to a lawn-mower as anything can be. It is precisely the same, cutting by a revolving cylinder, upon which are fixed several spiral knives, acting against a fixed blade, and thus forming a scissor. A steel comb is placed underneath, to protect the skin of the animal, and to ensure an even clipping of the hair. The operator holds the instrument with both hands, and moves it cross-grain over the whole surface, like a smoothing iron. The legs only, together with the lower part of the chest and the head, must still be clipped with scissors; but this may be done by hand whilst the other parts are being operated upon by the machine. The inventors affirm that two horses may thus be completed in five hours, requiring only the labour of three men—the operator with the machine, the clipper with the scissors, and a labourer to work the machine.

Thus far, the principal of this new instrument can easily be understood by all who are

acquainted with lawn-mowers; and although this novel and at the same time most useful application of the principal of rotary cutting may not be very strikingly new, the transmission of the rotary motion is in itself a most wonderful effort of mechanical skill and we believe is quite a new discovery in mechanics. The motive power is nearly the same as in a sewing machine. A man holds the handle of a wheel in his hand, and moves it with his foot. The motion is transmitted through a flexible chain as pliant as a rope, formed of articulated links and steel thread, so that the operator can vary his movements as he lists, without the least rigidity in the transmission medium. The motive power and its transmission through the chain are so perfect that the cutting cylinder gives 5,000 revolutions in a minute.

Hitherto in England clipping has been practised, so far as we know, only upon horses. In France it appears that experiments have been made by a celebrated grazier, with the view of testing the effects of clipping upon feeding oxen. Twelve oxen were selected, six of which were clipped. The clipped lot weighed at the commencement of the experiment 52 cwt.; the unclipped lot weighed 56 cwt. 10lbs. The two lots were fed alike, and at the end of two months the clipped lot weighed 65 cwt. 10lbs.; the unclipped lot only 61 cwt. 1 qr. Thus the increase per head, in the first lot, had been upwards of 3 cwt., and for the second only about 9lbs. We quote this report from a paper on the subject published in a French periodical belonging to the Society for the Protection of Animals; but we cannot reproduce at length their respective experiments, which extended over a period of six months, from the glaring and most unaccountable inaccuracies in the figures given, scarcely one of which proves correct. The idea, however, is worth noticing, as it is quite consonant with the teachings of physiology on the digestive organs, and especially on the combustion of the carbonaceous and fat-producing elements of the food in the lungs, to suppose that fat will more readily accumulate in the tissues of an animal where insensible perspiration is not impeded by a thick fur, than in one whose skin is profusely covered with hair. Long hair in winter is a provision of Nature to protect animals living in the wild state from the injurious effects of the cold; but in the domestic life, and especially within warm and comfortable feeding boxes, this winter garment is useless, and evidently pernicious.—*Mark Lane Express*.

THE GRUB—A CURE.—During the most part of past week the grub continued its ravages to an increasing and nearly an alarming extent—being almost universal throughout the whole of the northern counties, the cold, backward weather very much weakening the plants, and

allowing the worm a greater freedom for its ravages. Curiously enough, this year the greatest amount of destruction has been upon dry and early soil; whereas in former years the grub used to commit most ravage in heavy, wet soils. All the experience tends to show that the only safeguard against grub is to secure good, sound seed, make the land well, and add manure which will aid in quickly advancing the crop. On one farm on which there has been a great deal of injury done by the grub the farmer having apprehensions that a particular field in which there was a good deal of foggage would be very bad with the grub, had the land thoroughly harrowed, and before sowing the oats he mixed with the seed a quantity of guano equal to about 1 cwt. to the acre of land to be sown, and sowed by hand the seed thus prepared. The seed was the same that he had sown in several other fields, and while in those where no guano was used the ravages of the grub are extensive, on this field laid down with seed mixed with guano, and on which he apprehended such injury, there is not the slightest appearance of the grub, and the crop promises to be a good one. Another farmer on Deveronside took the same plan with two of his fields, and these are quite free from grub, and exhibit great luxuriance, while the rest of his crop is much injured. We know of other cases where the same plan has been equally successful.—*Banff Journal*.

WHY HOGS EAT ASHES, &c—Mr. Mechi, of Tip Tree Hall, England, has discovered that pigs, when shut up to fatten, are very fond of cinders, and improve in condition by eating a certain portion of them every day. Some persons are unable to account for this singular propensity in swine. Poultry are very fond of egg shells, lime, sand, &c., and it is well known these substances are necessary in order to form the shells of eggs, and to furnish material for the bones of fowls. Now it is reasonable to suppose that swine eat ashes and cinders for the purpose of supplying the material for their bones, and this singular instinct in animals so low in the scale of intelligence, is truly wonderful, for ashes contain the ingredients which are necessary to form bones, viz., carbonate and sulphate of lime and magnesia, clay, silica gelatinized and made soluble by the fire. When hogs are at large, they take in clay and silica with their food, and eat bones and roots, which contain the necessary ingredients; but when they are pent up, they endeavor to supply the material necessary for keeping up their frames by devouring ashes and cinders. Let them have plenty of them.—*Prairie Farmer*.

DISINFECTING AGENTS.—Now that the warm weather is upon us, our citizens should thoroughly cleanse their premises, rendering them as pure and healthy as possible. We are convinced that a great portion of the diseases so

prevailent during the hot months in summer, is attributable to the accumulation of filth in alleys and yards. There are a number of disinfecting agents which will be found efficient in removing offensive smells from damp, mouldy cellars, yards, pools of stagnant water, decaying vegetable mater, &c. Either of the following will answer the purpose, while they cost but a trifle:

1. One pint of the liquor of chloride of zinc, in one pailfull of water, and one pound of chloride of lime in another pailfull of water. This is perhaps the most effective of anything that can be used, and when thrown upon decayed vegetable matter of any description, will effectually destroy all offensive odors.

2. Three or four pounds of sulphate of iron (copperas) dissolved in a pailfull of water will, in many cases, be sufficient to remove all offensive odors.

3. Chloride of lime is better to scatter about damp places, in yards, in damp cellars, and upon heaps of filth.—*Scientific American.*

FRENCH AGRICULTURE—SMALL FARMS.—Notwithstanding the popularity of the system of the subdivision (*morcellement*) of the land consequent on the law of succession, one of the relics of the revolution, it is evident that its most strenuous advocates begin to have strong misgivings as to the working of the law, and to suggest remedies for the counteraction or removal of the evils it entails. For instance: If a man holds four fields, one of which is, say, a vineyard, another pasture, a third arable, and a fourth wood—the whole comprising four hectares, or not quite ten acres—and he dies, leaving four children, each of those survivors may claim a *fourth part of each field*; and thus the *four hectares may be divided into sixteen parts*, to be again subdivided in case of death of the owners having children. In Germany this *morcellement* had risen to such a height that it was found necessary to pass a “law of consolidation,” by which all the lands of a commune were thrown together, and then the proprietors received each an adequate portion in one piece; and it is recommended to follow the same plan in France, but it appears neither the Government nor the present proprietors (of whom there are between five and six millions) are favour able to such a measure, although some of the first men in France (amongst whom is M. Leonce de Lavergne) are in favour of it. Something, however, must soon be done; for French agriculture has already declined to an alarming extent under the system, which will break down of its own weight if not altered in time.—*Mark-lane Express.*

POTATOES.—Harvest and store immediately in a dark, cool and well-ventilated cellar. A liberal amount of earth collected with them is rather beneficial than otherwise, in their preservation.

Editorial Notices, &c.

We have received since the date of our last number, the current numbers of the QUARTERLY, WESTMINSTER, and NORTH BRITISH REVIEWS. Their contents are as follows:—

QUARTERLY:—The Resources and Future of Austria; Natural History of the Bible; Glacial Theories; Our Colonial System; Washington Irving; Modern Spiritualism; Sacred Trees and Flowers; The Nile.

WESTMINSTER:—The Growth of Christianity; The Rival Races; Utilitarianism; Gamesters and Gaming Houses; Marriages of Consanguinity; Saint Simon and his Disciples; The Naturalist on the River Amazon; Blanc's History of the French Revolution; Poland; Lancashire; Contemporary Literature.

NORTH BRITISH:—Roger Collard—Philosopher and Politician; Wilson's Prehistoric Man; Thomas de Quincey; Henry St. John and the Reign of Queen Anne; The Education and Management of the Imbecile; The West Highlands of Scotland; Pretensions of Spiritualism; Mormonism—Past and Present; The Cotton Famine and Lancashire Districts; The National Defences.

It will be seen from the above that these Standard Reviews contain articles from the pens of the most gifted writers, on varied and interesting subjects, with which no person in the present day having the least pretensions to intelligence can afford to remain unacquainted. The current numbers of these Reviews commence new volumes, so that the present is a convenient time for new subscribers to commence. BLACKWOOD'S MAGAZINE for September, also published by LEONARD SCOTT, & Co., NEW YORK, contains among its sound excellent articles, one on the Battle of Gettysburg and the Campaign in Pennsylvania, from the pen of a British Officer, that will be read with great interest, on this side of the Atlantic.

THE BRITISH AMERICAN MAGAZINE, Nos. 5 & 6:—*Toronto: Rollo & Adam.*

The two last numbers of this excellent periodical contain the usual amount of interesting and instructive articles from Canadian writers. Number 6 completes the first volume, a handsome book of near 700 pages. It combines both instruction and amusement of a literary

and rational kind, and it ought to be a welcome visitor throughout the length and breadth of the British Provinces, in which the acquisition of useful knowledge and the culture of a refined taste are deemed objects worth acquiring.

OUR PRESENT NUMBER.—Owing to the Editors of this Journal having been unavoidably much occupied with other pressing duties, the publication of the present number has been delayed past the usual time of appearance. The next number will contain the corrected Prize List of the Provincial Exhibition.

STOCK SALE.—We beg leave to direct attention to the Sale of valuable stock advertized in another column, by Mr. Stone.

TORONTO MARKET PRICES.

TORONTO, OCTOBER 12, 1863.

Fall Wheat, per bushel.....	\$0 85 to \$0 95
Spring Wheat, ".....	75 " 83
Barley, ".....	82 " 86
Peas, ".....	55 " 00
Oats, ".....	45 " 46
Rye, ".....	56 " 60
Beef, ".....	3 00 " 4 50
Potatoes, per bushel.....	35 " 40
Apples.....	1 25 " 2 00
Fresh Butter, per lb.....	18 " 20
Eggs, per doz.....	11 " 13
Chickens, ".....	30 " 40
Calves, each.....	4 00 " 6 00
Sheep, each.....	3 00 " 4 00
Lambs, each.....	2 00 " 3 00
Hay, per ton.....	8 00 " 10 00
Straw, ".....	5 00 " 6 00
Hides, per 100 lbs.....	4 50 " 5 00
Calfskins, per lb.....	8 " 9
Sheep Skins.....	35 " 40
Lamb-skins, each.....	70 " 80
Wool, per lb.....	38 " 40
Plaster of Paris, per barrel..	95 " 1 00
Salt, per bbl.....	1 85 " 1 87

MONEY TO LEND,

In sums of \$250, \$500, and upwards, in
FARMING PROPERTY.

Apply, if by letter, prepaid, to

MR. WEBBER,

Upper Canada Land Registry Office, corner
Change Alley and Colborne St., Toronto, C.W.

Wanted some Good Farms, and Wild Lands,
in well settled districts. 3t

THOROUGH-BRED AYRSHIRES FOR SALE,

Apply to

R. L. DENISON,
Dover Court.

Aug. 20th, 1863.

MORETON LODGE

NEAR GU LPH, C.W.

Important Sale of Imported and Pure-bred
**Cotswold, Southdown, and Leicester
Sheep, Berkshire Pigs, &c.**

MR. W. S. G. KNOWLES HAS RECEIVED instructions to sell by Auction on Wednesday, the 21st day of October, next, at Moreton Lodge, belonging to Frederick W. Stone, Sixty Imported and Pure-bred Cotswold Rams, Thirty Cotswold Ewes, Fifteen Pure-bred Southdown Rams, Three Pure-bred Leicester Rams, and a few choice Berkshire and Small White Breed of Pigs.

Sale to commence at one o'clock. Terms: under \$25 Cash; over \$25, three months credit, on approved endorsed notes.

Guelph, C.W., 3rd October 1863

Coe's Super-Phosphate of Lime FOR WHEAT.

THE following testimony is from an extensive Wheat-grower, and the best of authority:
Near Frederick, Frederick Co., Md.,
January 2, 1863.

DEAR SIR,—I have used Coe's Super-phosphate of Lime for several years past with uniform success, and last season it proved particularly satisfactory. Ten acres of land which was of more than an ordinary poor quality was treated in the following manner:—On one half the piece I used Coe's super-phosphate, at the rate of 200 lbs. to the acre; on the other half Peruvian Guano at the same rate, and sowed with wheat. On the five acres on which I used Phosphate, I had at least twenty-five per cent. more wheat, and the berry was much larger and of nicer quality than where the Guano was used, and also the straw was much the heaviest where the Phosphate was used. I have used Coe's Phosphate in different ways, and on different crops, and the results have been highly satisfactory.

Very truly yours,
JOHN H DETRICK.

THOROUGH-BRED SHORT HORN FOR SALE.

MORETON DUKE, got by Mr. Stone's Bull 3rd Grand Duke, 229½, calved 9th June, 1860.

William of Oxford, got by Mr. Stone's Bull 12th Duke of Oxford, calved 19th November 1859.

David, got by Sir Charles, a son of 3rd Grand Duke, calved 1st March 1861.

Marquis of Oxford, got by William of Oxford, calved 20th March 1863.

Warwick, got by Moreton Duke, calved 26th March 1863.

Terms very reasonable.

W. WILLCOCKS BALDWIN.

Larchmere, Oak Ridge. 1t.

April, 1863.

SEED AND IMPLEMENT

WAREHOUSE.

ESTABLISHED 1836.

THE SUBSCRIBERS beg to inform the Farming Community and the Public generally, that they have now opened their new place of business in the

AGRICULTURAL HALL,

AT THE

COR. OF YONGE AND QUEEN STREETS,

Where they will keep an Extensive Stock of

FIELD AND GARDEN SEEDS.

of the best quality; and in connection with their

Wholesale & Retail Seed Business,

They will keep in Stock a Large and Varied Assortment of the most Improved

AGRICULTURAL IMPLEMENTS, HORTICULTURAL TOOLS, and USEFUL BOOKS for FARMERS and GARDENERS

JAMES FLEMING & CO.,

Seedsman to the Agricultural Association of U. C.

TORONTO, Dec. 16th, 1862.

Agricultural Implements.

One Horse Ploughs \$5 00 to \$ 7.00 each.

Two Horse Ploughs... Nos. 1, 2 & 3 16.50 "

" " " iron beam..... 12 00 "

Patterson & Brothers, Manufacturers, Belleville.

" " " wood Nos. 4 & 5 0.00 "

" " " No. 6..... 16.50 "

One Horse Hoes or Cultivators.... 8.00 "

Straw Cutters, for horse or hand

power 30.00 "

Draining Tools of Superior Quality, Spades, Shovels, Manure Forks, Potato Forks, Hay Forks, Cradles, Scythes, Snaiths, Iron Rakes, Hoes, Hand and Horse Hay Rakes, &c., &c., &c.

JAMES FLEMING & Co.

TORONTO, Dec. 16th, 1862.

Miscellaneous Articles.

FOR SALE BY

James Fleming & Co.

Rustic Iron Garden Chairs, Pain and Ornamented Flower Pots, Vases, Propagating-Glasses, Fish Globes, Aquariums, Green-house Syringes, Conservatory Pumps, Water-pots with patent brass roses, Fumigators, Saynor's celebrated Pruning and Budding Knives, Bass Mats, Hedge Shears, Transplanting Trowels, Grass Shears with long handles, Thistle Spuds, Fancy Rakes and Hoes, Hatchets, Hammers, Sets of Garden Tools for Boys, Large Pruning Shears, Garden Lines and Reels, Gardener's Gloves &c., &c., &c.

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THE CANADIAN AGRICULTURIST

AND JOURNAL OF THE

BOARD OF AGRICULTURE

OF UPPER CANADA.

THIS LONG ESTABLISHED PERIODICAL is published in Toronto on the 1st of each month, making 12 numbers in the year.

Each number contains not less than 40 pages, the size of the page of this Prize List, occasionally illustrated by Wood Cuts, thus giving a large and handsome volume of about 500 pages.

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Professor Buckland, University College, Toronto. Hugh C. Thomson, Secretary Board of Agriculture of Upper Canada. Andrew Smith, Licentiate of the Edinburgh Veterinary College and Consulting Surgeon to the Board of Agriculture of Upper Canada.

All orders to be addressed to the Secretary of the Board of Agriculture, Toronto.

The back numbers of the present volume can still be supplied at the above rates.

Orders for the half volume, commencing 1st July, taken at 25 cts. per copy; discount for a number of copies in same proportion as above.

AGRICULTURIST OFFICE. }
Toronto, June, 1863. }

THE
Canadian Agriculturist
 AND
 JOURNAL OF THE BOARD OF AGRICULTURE
 OF UPPER CANADA.

VOL. XV.

TORONTO, NOVEMBER, 1863.

No. 11.

**PRECAUTIONS IN CULTIVATING
 POTATOES.**

It is well known that this important tuber has very much deteriorated of late years; the yield being less and the quality inferior to what was formerly obtained. Several causes have probably combined to produce this result; such as insufficient attention to the storing and selecting of seed, unseasonably late planting, injudicious manuring, wetness of the land and its inadequate preparation. The character of the seasons has no doubt much to do with the result. It was confidently expected during the late favourable summer in the British Islands that the potato crop would prove unusually sound and abundant, as the plant had seldom a healthier appearance; but it would appear from recent accounts that the heavy rains of September seriously affected the ripening process, and that large areas, particularly in late and damp situations, have been visited by disease, and the crop as a consequence has been very much deteriorated. To some extent this has also been the case in Canada, as well as in certain localities of the neighbouring States. We condense the following precautions for the consideration of our readers from a recent number of the "*Journal de la Société Centrale d'Agriculture Belgique*."

1st. The late planting, which prevents the plant undergoing at the proper period the different phases of vegetation, and weakens the vital principle of the potatoes, which an earlier planting would have strengthened.

2nd. The division of the tuber into quarters, which deprives the plant of the nourishment nature has placed at its disposal.

3rd. The principal cause of the diminution in the crops of potatoes is the use of the lower part of the tuber instead of the upper part or crown. The latter produces sprouts not only stronger, but quicker and more productive, whilst the lower part of the tuber produces sprouts later and less vigorous. The sprouts are often very slender, and produce weak stalks without strength, and which fall to the ground, and often at the raising of the potato an abundant quantity of hair like roots is found instead of potatoes; if they are found, it is in small numbers and of every little size. These facts are said to be but little known, and deserve particular attention by cultivators of this useful esculent. Let them choose for planting tubers with large germs or eyes, and if they do not wish to plant them whole, cut them in twos and across; plant only the upper half or crown, and keep the lower part for consuming.

4th. It is advisable, after raising the crop, to wash the seed potatoes in diluted urine with lime and salt, and those intended for consuming, in water with lime and salt, and dry them well before pitting. The seed potatoes should not be taken cut till the time for planting, in order that the germs and little roots may not be destroyed, as this would weaken and retard the growth of the plant. When potatoes are kept in outhouses, it is best to pick them over and cut them long before planting, in order to dry the wound. A hard crust is formed

on the surface, which preserves the pulp from decaying and from insects. It is also advisable, after having cut the tubers, to expose them to the sun to make them green before being planted.

We may further observe that seed potatoes should be chosen from the most productive parts, and free from disease. The soil should be well and deeply ploughed, when practicable, before winter, and surface furrowed, to prevent stagnant water. Upon much of our old cultivated land the incorporation of a good dressing of quick-lime would be beneficial to the potato, and succeeding crops. Farm yard manure, particularly if in a rough or long state, would be better applied early, and broad cast, and thoroughly mixed up with the soil, rather than in drills. These hints will no doubt be suggestive of others by observant, practical men. A warm, dry, well prepared soil, admitting of early planting with selected, healthy tubers, will always be found among the most favourable conditions for securing a remunerating crop.

AGRICULTURAL AND VETERINARY INSTRUCTION.

It is intended to resume a series of popular lectures on the Science and Practice of Agriculture, and the Veterinary Art, about the middle of January next. The course, like that of last year, will be open and adapted to young men from all parts of the Province free of charge, and will be finished in four or five weeks. In the department of Agriculture, Professor Buckland will be assisted by the Professors of Chemistry, Geology, Natural History, and Meteorology, in University College, and Mr. Smith will give practical instruction in the Anatomy, Physiology and Diseases of Farm Animals. This course being specially adapted to the wants of young men engaged in, or intended for Agricultural pursuits, who cannot conveniently be absent from home for a longer period, and who have not had the opportunity of studying these subjects systematically, it is hoped that a goodly number will be found to avail themselves of the advantages hereby offered. The main object of the course is to assist in forming correct habits of observation among those who cultivate the soil, to awaken a spirit of enquiry and foster a taste for knowledge, and to put young men in a way of reading and studying at home. Fuller particulars

will be given in our next issue; meanwhile further information may be obtained by addressing Professor Buckland, University College, Toronto.

For the Agriculturist.

A FEW WORDS ABOUT THE PROVINCIAL EXHIBITION OF 1863, LATELY HELD AT KINGSTON.

The elaborate reports of the *Globe*, *Leader*, and *Kingston News* render it unnecessary to describe it at length. The reporters certainly confer a favor on the Association and the Province by their earnest and full work. 'Old visitors, exhibitors, and officers find but little difficulty in connexion with these annual gatherings, not unmixed with profit and pleasant reunions. New hands at the business do not do so well, and it is not to be wondered at that the vexations, tediousness, and absolute expense attending the occasion, deter many from being present either as visitors, exhibitors, or delegates.

Arriving at Kingston, on Wednesday, we remained until Friday evening, inspecting the working of the business of the Association, by its officers, exhibitors, and passing observations upon the position of the visitors. A Provincial exhibition is undoubtedly attended with much labour, a great expense, and considerable anxiety, worry and care.

An eastern delegate naturally feels that his enterprising neighbours of the west have got a firm hold of the great Association, and that his interference is almost fruitless. He looks at the leading officers and exhibitors, at the city delegations, and crystal palaces; he hears the oft repeated statement that the exhibition pays in large places only, such as Toronto, Hamilton, and perhaps London, and asks if all is well, or as it should be. There is a straining after a great *show*, requiring a great outlay—a great attendance to meet the cost—a large staff of officers to do the work—large and handsome structures, and expensive and capacious grounds. If the weather is fine and a glad sun beams out over-head, and the attendance good, all is well. But, if these things fail, then alas! debt and heavy loss are the result.

Do not the managers of the Association aim at too much? Why look for a great *show* every year? Would not the objects of the Association be better attained by husbanding the resources—by extending the exhibition to all parts of the Province where *reasonable* provisions could be made, and by looking forward to and having one great Provincial Exhibition every three years, embracing both Upper and Lower Canada, to be held alternately, say at such places as Toronto and Montreal?

On the present occasion Guelph and Belleville made vigorous efforts to secure the next exhibition. The County and Town Councils, aided by handsome private subscriptions, came

forward most liberally, and put in their claims, and pressed to have either one of these localities selected for 1864. Hamilton was the competitor. It was the city element against the town and country, and, need we say, who carried the day? We were almost unacquainted with any of the parties, and listened to all that was said on all sides. We could see that old officials, pressed by past experience, feared the loss attending a change from the cities to the towns. The cases of Brockville and Brantford were referred to as entailing loss upon the Association, and even Kingston, with its crystal palace and handsome structures, was hardly sufficient to meet their views. Cities with their more ample accommodations—crowds with their numerous half-dollars, loomed up strongly in their view. Toronto is a favoured region in this respect, and to us personally it would be a pleasant and favoured location. But, looking to the objects of the Association—its tendency to draw out the resources of the country—its power to stimulate the agriculturists of the Province—its educational advantages, drawn from its exhibition and comparison of the cereals; the improved breeds of animals; the dairy products; the roots and fruits; the improved machinery, and labour saving implements, we felt a desire to see the annual exhibition extended as much as possible to every part of the Province, and we felt bound to vote in turn with our Guelph and Belleville neighbours. We would have aided their enterprize—have helped more show grounds and palaces into existence, and have given permanency to their spirited efforts to introduce the Provincial exhibition amongst them.

Discussion will yet change the mode of conducting our exhibitions. Delegates from outside of the leading cities will combine for this purpose. Our great and costly *shows* will come every three years. The intervening exhibitions will be devoted more truly to the objects of the Association; its ex-officio members of the Board will muster their resources, and in time master the position, and we trust the columns of the *Agriculturist* will be to open all sides of the question.

The county societies must prepare the way by paying their delegates, and sending experienced and able men to represent them. They have been too long asleep and felt too little interest in the doings of their great brother, the Provincial Association.

Connected with this subject we may notice that a very conservative enactment was passed at the last annual meeting at Kingston, having the effect of securing the annual exhibitions to those places only which provide very costly permanent structures. Those at Kingston cost not less than \$16,000. This rule cannot now be changed without a three months advertisement in the *Agriculturist* and *Journal of Arts*, and by a *two-thirds* vote of the Directors present. Up hill work, truly! A strong nail has been

driven in, favouring the large cities and places. The only way of dealing with the question now is either by Act of Parliament, or by giving the notices, warning out the county delegates—changing the system to one of a great *show* every three years, and an annual but lesser one in the intervening years.

The improvements in machinery, in the arts connected with the objects of the Association, and the exhibitions of the leading stock raisers, with their imported animals, would do very well if brought together every three years. The intervening exhibitions would bring out every year nearly all the most useful and best parts of the exhibition, and spread the contest over more parts of the Province, and bring together a portion at least of the leading agriculturists. Localities not now reached would be benefitted. Goderich, St. Catharines, Guelph, Belleville, Brockville, Perth, Cornwall, Ottawa and other localities, would all come in, in time, and could afford to participate in the Government grant for stimulating the efforts of the bone and sinew of the Province. The *Agriculturist* and *Transactions of the Board* would find more readers. The well known faces of Col. Thomson, Professor Buckland, Hon. D. Christie, R. L. Denison, along with our Stones, Snells, Fergusons, Nimmos, Millers and others would be still better known. The officers, secretaries and scls, (all useful in their respective places) would have more sympathy and perhaps see more honest and valuable men among the homespun coats. Plain farmers, yet worthy men, gathered into cities in crowds, having no acquaintance with the officials of their great Association, dressed out in city paraphernalia it may be, sometimes meet with curt answers, and pass on when it were better otherwise. We think an effort must be made to stop the centralization of this great leading institution of our country; to introduce it to our whole people; to enlist the attention of all our farmers to its work and business; to make it what it should be—a people's association. Its resources and its expenditures are fair subjects of criticism, and should be as open and plain as daylight. Every one knows that a hurried annual meeting is not the place to inquire into these matters, and little do county delegates know of them as things now are.

The annual meeting, we think, should not be deferred until Friday, but take place on the second day of the exhibition, and continue to the third if need be. When left to the last everything is hurried—all are anxious not to be kept from home over Sunday, and hurry off by the boats and cars at the end of the week.

We purpose returning to the subject of the Exhibition and Provincial Association again in future numbers, and trust other parties will discuss these matters through the *Agriculturist*.

W. O. BUELL,
Delegate S. Lanark Soc'y.

Perth 29th Sept., 1863.

AGRICULTURAL SHOWS.

For the Agriculturist.

DEAR SIR,—In looking over the accounts of the annual fairs and exhibitions which usually take place at this season of the year, I was struck with the fact that some of our breeders adopt the plan of attending at several of them and thereby secure a large amount of prizes; nor is this the only objection, the entrance of some of them at the local fairs deters others from competing, and thus one of the objects of the Association is defeated. Is not the following plan worth considering?

Let all the local exhibitions come off before the Provincial Show, and let them be confined to stock owned *within* the agricultural district or county, this would prepare them for the grand affair, at which the same cattle should not be allowed to take a money prize *two years* consecutively. A very small sum would procure a medal to be annually contended for by those exhibitors who had, in previous years won money prizes, and whose cattle should enter "priced" for sale, the judges having the power to determine whether such price was marked so as to prevent sale.

The same objection does not exist in the matter of grains and roots, but it most certainly does in arts and manufactures, as year after year are seen the same pictures, stoves, wax flowers, ladies' work, &c., &c.

W. C. CROFTON,

Toronto, October, 1863.

PLOWING—FALL OR SPRING.

This question is discussed every year, yet remains more or less unsettled. We do not now expect to dispose of it effectually, but simply to suggest a few hints worthy of consideration.

No one can deny that fall plowing saves time for doing other work in the busy season of spring. Moreover, the soil is drier in fall than in spring, and so in a better condition for working. He who has waited week after week for the spring rains to pass over and the ground to settle, will feel the force of this consideration. Again, if a piece of land is infested with grubs or other vermin, or with the roots of weeds, there is hardly a better way to subdue these pests than by throwing them up to the surface just before the winter frosts set in. Grasshoppers, the midge, and weevil, cannot thrive much after turning their houses topsy turvey in October or November. They cannot rebuild in winter, and many of them will be killed outright. For light, sandy soil, apt to blow about in open winters, or those which are quite gravelly and porous, we question the expediency of fall plowing. But for the stiff clays, which need the action of frost to pulverise them, this is the best treatment they can receive.

A friend in Wisconsin writes to us that in all his region the farmers do as much fall plowing as they can, finishing up the balance in spring; that then they sow and harrow all together at the same time, and that in summer no one can see any difference between the growth and yield of the several fields; at harvest time, perhaps the spring-plowed land is more mellow than the fall-plowed, but the grain is worse lodged. A correspondent of a western journal claims that for spring wheat and barley, fall plowing is much preferable.—He thinks that spring wheat grown on fall plowed land, yields a better and surer crop than wheat sown in October. The exposure to atmospheric influences during the winter, mellow and enriches the seed bed to such a degree, that whenever the grain is sown it has the elements which it needs at hand ready for assimilation. The soil newly turned up has first to be prepared or mellowed, oxidized, as the chemists would call it, before it becomes fit to yield nourishment; and while this process is going on (in spring) much precious time is lost, and the growth of the plant is abbreviated in proportion, its time for tillering is cut short, and the yield cannot be as large as when it has the whole length of the season which nature seems to have set apart as that in which the plant shall make stems and leaves, previous to the formation of the seed-vessels. This certainly can be said in favour of the fall plowing of sward land intended for corn. If it is done early in the Autumn, the sod becomes partially rotted before the time comes for planting, and so sooner prepared to act as a fertilizer for the crop, than it would have been if plowed in the spring. If ever the plant wants the food of the decayed sod, it is early in the season, to give it a quick and vigorous start.

Late planting is a frequent cause of the failure of crops. After they are got into the ground, a drouth often sets in which retards the germination of the seed. We plant late, because the cold rains put us back, and because of the pressure of other work. Now, if we should do much of our plowing in the fall, we could take advantage of the first favourable weather to get our seeds in, and so gain considerable time in their growth. If we postpone all our plowing until spring, we often do the work when the land is too wet; the consequence is that it becomes lumpy and stiff baked—a condition unfavourable for the growth of any crop, and from which the land does not fully recover in a season or two.—*American Agriculturist.*

GREAT LAND SALE.—About 90,000 acres of land in the County of Grey, C. W., are to be offered for sale at auction at the office of the resident agent in Durham, on the 20th January next.

Agricultural Intelligence.

PROTECTION OF SHEEP.

The following is the "Act for the protection of sheep in Upper Canada," which, having passed through the Upper House, in charge of Hon. Mr. Alexander, and through the Lower House, in charge of the Hon. Mr. Brown, has now become law:—

Her Majesty, by and with the advice and consent of the Legislative Council and Assembly of Canada, enacts as follows:—

1. It shall be lawful for any person to kill any dog in the act of pursuing, or worrying, or destroying sheep, elsewhere than on the land belonging to the owner of such dog.

2. On complaint made in writing on oath before any Justice of the Peace, for any city, town or county, or union of counties in Upper Canada, that any person residing in such city, town or county, or union of counties, owns or has in his possession a dog which has within six months previous worried and injured or destroyed any sheep, such Justice of the Peace may issue his summons, directed to such person, stating shortly the matter of such complaint, and requiring such person to appear before him, at a certain time and place therein stated, to answer such complaint, and to be further dealt with according to law.

3. The proceedings on such complaint and summons shall be regulated by the Act "respecting the duties of Justices of the Peace out of Sessions, in relation to summary convictions and orders," which shall apply to cases under this Act.

4. In case any person is convicted on the oath of a credible witness, of owning or having in his possession a dog which has worried and injured or destroyed any sheep, the Justice of the Peace may make an order for the killing of such dog (describing the same according to the tenor of the description given in the complaint and in the evidence,) within three days, and in default thereof, may in his discretion impose a fine upon such person, not exceeding twenty dollars with costs; and all penalties imposed under this Act shall be applied to the use of the municipality in which the defendant resides.

5. No conviction under this Act shall be a bar to any action by the owner or possessor, as aforesaid, of any sheep, for the recovery of damages for the injury done to such sheep, in respect of which such conviction is had.

6. It shall not be necessary for the plaintiff in any action of damages for injury done by a dog to sheep, to prove that the defendant was aware of the propensity of the dog to pursue or injure sheep; nor shall the liability of the owner or possessor, as aforesaid, of any dog in damages for any injury done by such dog to any sheep, depend upon his previous knowledge of the propensity of such dog to injure sheep.

7. The defendant in any action of damages for killing a dog under the first section of this Act, may plead the general issue and give this Act and the special matter in evidence.

8. This Act shall apply to Upper Canada only.

REPORT ON THE WENTWORTH TURNIP MATCH.

To the President and Directors of the Hamilton and Wentworth Agricultural Societies.

GENTLEMEN,—Having been appointed a committee to award the prizes offered by your Societies, for the best field of turnips, not less than two acres, also for the best $\frac{1}{4}$ acre of carrots, we beg leave to make the following report:—

That in the discharging our duties, we examined the different lots entered, in the following order:—

TUESDAY Morning, Oct. 20.

1st. We proceeded to the farm of Mr. Clarkson Applegarth, East Flamboro, where we examined a field of about two acres, Skirving's & Laing's, selecting a fair average of the piece; measured off 25 feet square, (being about one seventh of an acre) the proceeds of which weighed 277 $\frac{1}{2}$ lbs., equal to 440 25 60 bushels per acre, or 13 tons, 4 cwt. 25 lbs. Mr. Applegarth also entered carrots which, on measurement, was found short of the quantity required.

2nd. Mr. Thomas Stock, East Flamboro, a field of 8 acres, well cultivated and in the very best of order. Mr. Stock informed us that the seed was of his own growing, a very strong proof that Canadian grown seed is quite equal, if not superior to the imported. Measured off 25 feet square, found the yield to be 723 $\frac{1}{2}$ lbs., equal to 844 5 60 bushels per acre or 25 tons, 6 cwt. 45 lbs. Mr. Stock handed in the following as his mode of culture:—Soil sand loam, oat stubble, manured with 18 loads of farm yard manure per acre, and ploughed in fall, twice ploughed in spring, seed sown 13th and 14th June, at the rate of 3 lbs. per acre; (Matson's) cultivated three times and hoed twice. Mr. Stock also competed with carrots, (white Belgian) about one acre in the same field with turnips, and the same preparation; seed sown 27th May; 25 feet by 12 $\frac{1}{2}$ yielded 247 $\frac{1}{2}$ lbs., equal 577 3 60 bushels or 19 tons, 5 cwt., 80 lbs.

3rd. Mr. H. R. O'Reilly, on the adjoining farm to Mr. Stock, 1 acre white Belgian carrots; soil sand loam, well cultivated; measured off 25 feet by 12 $\frac{1}{2}$ feet, which produced 345 lbs., equal 806 bushels per acre, or 23 tons, 8 cwt. 70 lbs. Mr. O'Reilly did not give in his mode of culture.

4th. Mr. John Weir, West Flamboro, a very fine field of 8 acres, equal quantities, Skirving's, Matson's, and old purple top; crop very uniform, bulbs medium size; had evidently been

well attended in the hoeing season, as the crop was very clean. Measured off 25 feet square, which produced 715½ lbs., equal 884 45 60 bushels per acre, or 25 tons 85lbs. Mr. Weir gave the following as his mode of culture:—Soil, sand loam, barley stubble, 12 loads of farm yard manure per acre, and ploughed in the fall 9 inches deep with the trench plough, cross ploughed in the spring as soon as the land became sufficiently dry, then harrowed and rolled until a fine tilth was secured; ploughed a second time about the 1st June, and again harrowed and rolled; commenced sowing on the 6th June, and finished on the 11th June; used 2½ lbs of seed per acre; drills 28 inches asunder, in which was sown 300 lbs. of bone dust per acre. In the same field Mr. Weir had a considerable piece of Kohi Rabi, the first we have seen growing in the field in the Province. We hope he will give the result of his experience in this as a field crop, through the columns of the Canadian *Agriculturist*.

5th. Mr. Wm. Crawford, Ancaster, three acres of purple top Swede—a fair crop, with but few blanks, and very clean; soil clay loam, after barley stubble, twelve loads of farm yard manure per acre, ploughed in fall and thoroughly cultivated in spring; drills twenty-eight inches asunder, seed sown 15th June. Produce of 25 feet square, 572½ lbs., equal to 668 12 00ths bushels per acre, or 20 tons, 92 lbs.

WEDNESDAY, October 21.

6th. William A. Cooley, Ancaster, 5 acres old purple top Swede. Soil, clay loam and black alluvial, after oat and pea stubble; twenty load of farm yard manure per acre, and ploughed in fall with trench plough, cultivated in spring, ploughed again, harrowed and rolled in the beginning of June, drills 24 inches asunder; seed sown 16th, 17th, and 25th of June, at rate of 3 lbs. per acre. Produce of 25 feet square, 598½ lbs., equal to 698 15 60ths bushels per acre, or 20 tons 18 cwt. 75 lbs.

7th. Thomas Dunbar, Ancaster, six acres Laing's and purple top, bulbs small. Produce of 25 feet square, 490½ lbs., equal to 572 32 60ths, bushels per acre, or 17 tons 3 cwt. 52lbs.

Mr. Dunbar also competed with carrots, white Belgian, roots very small. Measured off 25 feet by 12½ feet, producing 166½ lbs., equal to 388 50 60ths bushels per acre, or 11 tons, 13 cwt. 10 lbs. We did not get his mode of culture.

8th. Mr. Jonathan Kelly, Ancaster, two acres Skirvings and Laings, bulbs large and well shaped. Soil, sand loam, clover sod, manured with farm yard manure and ploughed in fall, cultivated May 15th, ploughed second time June 1st, and harrowed, drills 28 inches asunder, seed sown June 25 and 26. Measured off 25 feet square, producing 593 lbs.,

equal to 691 50 60ths bushels per acre, or 20 tons 15 cwt. 50 lbs.

We also report that there were several pieces of mangold wurzel entered, but were not measured, in consequence of their being so very far short of crops.

We have great satisfaction in being able to speak in the highest terms of the appearance of the whole of the fields which we examined, with the exception of one or two.

We have been enabled, through the Secretary, to furnish the subjoined table, showing the maximum and the minimum yields of the competitions since 1859.

Having, we believe, fully ascertained the above mentioned facts, we feel it our duty to award the prizes as follows:—

TURNIPS.—1st, Thomas Stock, East Flamboro; 2nd, John Weir, West Flamboro; 3rd, Wm. A. Cooley, Ancaster; 4th, Jonathan Kelly, Ancaster.

CARROTS.—1st, H. R. O'Reilly, East Flamboro; 2nd, Thomas Stock, East Flamboro.

TABLE SHOWING THE YIELD OF THE DIFFERENT PIECES ENTERED FOR COMPETITION.

TURNIPS.			
No.	Names.	Township.	Yield per acre.
			Tons. cwt. lbs.
1.	Thomas Stock,	E. Flamboro,	25 6 45
2.	John Weir,	W. Flamboro,	23 0 85
3.	W. A. Cooley,	Ancaster,	20 18 95
4.	Jonathan Kelly,	do,	20 15 10
5.	Wm. Crawford,	do,	20 0 92
6.	Thomas Dunbar,	do,	17 3 53
7.	Clarkson Applegarth,	E. Flamboro,	13 4 25
CARROTS.			
1.	H. R. O'Reilly,	E. Flamboro,	23 8 70
2.	Thomas Stock,	do,	17 5 80
3.	Thomas Dunbar,	Ancaster	11 18 10

TABLE SHOWING THE MAXIMUM AND MINIMUM YIELD OF TURNIPS FROM 1859 TO 1863.

Year.	Pieces Entered.	Maximum Yield.			Minimum Yield.		
		Tons.	cwt.	lbs.	Tons.	cwt.	lbs.
1859.	6	28	11	0	11	16	0
1860.	15	59	0	0	21	12	0
1861.	10	32	0	0	25	0	0
1862.	11	39	0	0	21	7	0
1863.	10	25	6	45	13	4	25

All of which is respectfully submitted.

JAMES McMONIES.

JOHN SMITH.

THOMAS HATT.

Hamilton, Oct. 22nd, 1862.

PATENTS OF INVENTION.

BUREAU OF AGRICULTURE AND STATISTICS
PATENT OFFICE.—Quebec, Oct. 15, 1863.—His Excellency the Governor General has been pleased to grant Letters Patent of Invention for a period of fourteen years, from the dates thereof, to the following persons, viz.:—

Valentine Mitchell, junior, of the township of Cavan, in the County of Durham, machinist and farmer, for "A Wood Cutting Machine."—(Dated 12th January, 1863.)

Thomas Webster, of the Village of Brampton, in the County of Peel, for "Improved Feed motion for Straw Cutters."—(Dated 12th January, 1863.)

Joel Hughes, of the township of West Gwillimbury, in the County of Simcoe, Farmer, for "A Cheese Press to be known as Hughes' Double Cheese Press."—(Dated 12th of January, 1863.)

Sylvester Day, of the township of Brantford, in the County of Brant, Farmer, for "A two wheeled Hay Rake."—(Dated 12th Jan., 1863.)

Donald Murray, of the Village of St Mary's, in the County of Perth, Carpenter, for "An improved wood Sawing Machine."—(Dated 21st January, 1863.)

Oscar F. Shaver, of the Village of Thamesford, in the County of Oxford, Nurseryman, for "A Bag holding and weighing Machine."—(Dated 4th February 1863.)

Levi Willson McCormick, of the township of West Flamborough, in the County of Wentworth, Wheelwright, for "A Root Seed Drill."—(Dated 4th Feb., 1863.)

Thomas Penton, of the township of South Dumfries, in the County of Brant, Yeoman, for "A Regulating Seed Drill."—(Dated 4th Feb., 1863.)

William Sutton, of town of Brantford, in the County of Brant, Machinist, for "An Improved Grain Dryer."—(Dated 5th Feb., 1863.)

Avery D. Bacon, of the township of Malahide, in the County of Elgin, Mason, for "An Improved Beehive."—(Dated 11th of February 1863.)

Barton Sanderson, of the Township of Stanstead, Machinist, "A Bit for Tapping Sugar Maples."—(Dated 13th of March 1863.)

John Pettingill, of Coaticook, in the County of Stanstead, Machinist, for "a new and useful improvement in machines for digging potatoes."—(Dated 13th of March, 1863.)

Alonzo Henry Parsons, of the Village of Stanstead Plain, in the County of Stanstead, Carpenter, and Joiner, for a new and useful Beehive, to be called "The Improved Platform Beehive."—(Dated 16th March 1863.)

John Robert Martin, of the town of Cayuga, in the County of Haldimand, Barrister and Attorney at Law, for "An Improved Field Roller."—(Dated 17th of March, 1863.)

Henry Wellington Ostrom, of the Township of Sidney, in the County of Hastings, Yeoman, for "A Broad Cast Grain Sower."—(Dated 21st March, 1863.)

Eli Shupe, of the village of St George, in the Township of Dumfries, and County of Brant, Machinist, for "A Combined Reaping and Mowing Machine."—(Dated 23rd March 1863)

George Henry Fourdinier, of the Village of Lyn, in the County of Leeds, Gentleman, for "A revolving Dessicator for drying and improving grain and for manufacturing malt."—(Dated 24th March, 1863.)

William Henry Sutton and James John Gibson, both of the Town of Brantford, County Brant, Machinist, "A Combined hot and cold air mechanical Grain Dryer."—(Dated 6th April, 1863.)

Michael Burkholder, of Pickering, in the County of Ontario, Yeoman, for "An improved wheeled steel Toothed Horse Rake."—Dated 8th of April, 1863.)

William Saxon Arnold, of the town, of Chatham, in the County of Kent, Carpenter, "An improvement in a wood Sawing Machine, being a Crank attached to a Pitman of the saw and a self adjusting gage for raising or lowering the saw when in motion."—(Dated 8th of April, 1863.)

William Randall of the Township of Uxbridge, in the County of Ontario, Carpenter, "An improvement in Straw Cutters called the Eccentric Straw Cutter."—(Dated 13th April, 1863.)

Freeman Clark Noxon, of Bloomfield, in the County of Prince Edward, Farmer, for "An improved Cultivator."—(Dated 17th of April, 1863.)

William Harvey Henderson, of the Town of Brockville, in the County of Leeds, Machinist, for "A Churn."—(Dated 23th of April, 1863.)

Edward Douson, of the Township of Clarke, in the County of Durham, Yeoman, for "A Root Cutter."—(Dated 13th of May, 1863.)

Charles Jones, of the village of Palermo, in the County of Halton, Assignee of Samuel Morse, of the town of Milton, in the County of Halton, Machinist, for "Improvements to Fraser's Churn."—(Dated 19th May, 1863.)

Robert Twiss Sutton, of the town of Lindsay, in the County of Victoria, Mechanic, for "A Machine or apparatus for Drying and Cooling Grain."—(Dated 19th May, 1863.)

Edward Curtois, of the town of Iberville, Machinist, for "A portable and self adjusting Fence."—(Dated 1st June, 1863.)

John Nelson, of the town of Napanee, in the County of Lennox and Addington, Machinist, for "A mode of constructing wrought iron Threshing Cylinders."—(Date 3rd June, 1863)

Richard Sylvester, of the Township of Scarborough, in the County of York, Cradle manufacturer, for "An improved Cradle."—(Dated 3rd June, 1863)

Josiah James, of Whitechurch, in the County of York, Machinist, for "An improvement in Pumps."—(Dated 4th June, 1863)

George Bender, Zenas B. Lewis and Matthew Milward, of the village of Clifton, in the County of Welland, Gentlemen, "Improvements in Wood Sawing Machines."—(Dated 4th June, 1863)

Archibald McKillop, of the township of Inverness, in the County of Megantic, Farmer, for "A suspension Gate and Barn Door."—(Dated 8th June, 1863)

Francis T. Richmond, Lumber Merchant, and William Thomas, Carpenter, both of the City of London, in the County of Middlesex, for "the Locomotive Crosscut Sawing Machine."—(Dated 9th June, 1863)

Richard Benson Bennett, of the Town of Belleville, in the County of Hastings, Brewer, for "An improved Stainton Plough." (Dated 18th June, 1863)

John Walmsley, of the Village of Berlin, in the County of Waterloo, Farmer and Wagon maker, for "Improvements in Agricultural Implements for pulverizing and casting seed and other substances thereon" (Dated 18th June, 1853)

John Cameron McDougall, of Fort Erie, in the County of Welland, Machinist, for "New and useful improvements in Harvesting Machines." (Dated 22nd of June, 1863)

Horticulture.

MEETING OF THE FRUIT GROWERS' ASSOCIATION OF CANADA WEST.

Pursuant to notice, a special meeting of the members of this Association was held in the Town Hall, St. Catharines, on the 7th October, Judge Logie, of Hamilton presiding, and D. W. Beadle, Esq., Secretary. There was a very fine collection of open air grapes, pears and apples on exhibition, such as we feel safe in saying can only be produced in this part of the Province. The following is a list of the varieties of fruit shown by each exhibitor, from which those who had not the pleasure of witnessing the display may form some opinion of its extent:—

M. Y. Keating, Louth—Plate of Snow Apples.

Bruce & Murray, Hamilton,—*Hardy Grapes*—Anna, Delaware, Dianna, Hartford Prolific, Concord, Rebecca, Logan, Clinton, King, White Portugal, (under glass) Muscat Hamburg, Bowood Muskat, Bidwell Seedling.

C. Arnold, Paris—*Grapes*—Diana, Black Prince, a seedling.

Wm. H. Read, Port Dalhousie—*Grapes*—Ontario, Dalhousie, Lincoln, Black Chief, Hattie, Silver Cluster, White Ontario, Red Lion, Black Jack, Chippewa, Diana, Delaware, North Carolina, Cauby's August, Garrigue's, Louisa, Isabella, Hartford Prolific, Isabella Seedling, Mrs. Jones, Black Seedling. *Pears*—Lawrence, Beurre Clairgeau, Gansel's Bergamot, White Doyenne, Seckel, Beurre Diel, Vicar of Wakefield, Belle Lucrative, Duchess d'Angouleme, Beurre d'Anjou, Easter Beurre. *Apples*—Anglo-American, Jeffries, Hoary Morning.

T. H. Graydon, St. Catharines—*Grapes*—(Black or Purple)—Ontario, Isabella, Concord, Louisa, Union Village, Tokalon, Clinton; (red) Rogers' No. 15, Delaware, Northern Mascadine, Diana; (white) Rogers' No. 13, Canadian Chief, Rebecca, Sweet Water, Cayuga. *Apples*—Norton Melon. *Pears*—Beurre Diel, Easter Beurre.

W. Holton, Hamilton—*Apples*—Gravenstein, Alexander, Northern Spy, Golden Russett, Vandevere, Canada Reinette, Black Detroit, Saxon, Drap d'Or, Dyer, Fameuse, Fall Jeannetting, St. Lawrence, Cooper's Red Market, Mother.

Pears—Beurre d'Anjou, Beurre Clairgeau, Oswego Beurre, Grey Doyenne, Windsor, Soldat Laboreur, Bergamot Cadette, Belle Lucrative, Forelle, Columbia, McVain, Beurre Diel, Seckel.

Jas. Taylor, St. Catharines—*Grapes*—Union Village, Bebecca, Diana, Canadian Chief, Catawba, Delaware Louisa, Anna, Elsinberg.

T. R. Merritt, St. Catharines—*Apples*—English Golden Russett, American Golden Russett, Pomme Grise, Roxbury Russett, Ribston Pippin, Northern Spy, Rhode Island Greening, two varieties not named. *Pears*—Louise Bonne de Jersey, Duchess d'Angouleme, Beurre Diel.

D. W. Beadle, St. Catharines and Grantham—79 varieties of Apples, 17 varieties of Pears, and 2 Seedling Grapes.

E. Gregory, Louth—Plate of Ontario Grapes.

On organizing the meeting, the chairman explained that the object in calling this meeting was to see and test the seedling and other grapes and fruits, which could be done to better advantage now than in November, which he thought was not so good a month as October for holding the annual meeting.

It was then moved by Mr. Holton, seconded by Mr. Smith, and carried unanimously,—That the regular meeting in November be dispensed with. Mr. Holton also promised to move an amendment to the constitution regarding future meetings.

Moved by W. Holton, seconded by M. Y. Keating,—That Messrs. Bruce, Arnold, W. Read, T. H. Graydon, and James Taylor, be a committee to examine the seedling and new grapes on exhibition, and report this evening. —Carried.

Moved by C. Arnold, seconded by J. Taylor,—That Pears be first taken up for discussion.

Moved by C. Arnold, seconded by M. Y. Keating,—that the Duchess d'Angouleme be added to the list for general cultivation.

Mr. Holton thought it unsafe to recommend it for general cultivation; it does not regularly bear well about Hamilton; in favoured localities it produces a fair crop, while in other localities it fails altogether. Mr. W. H. Read, of Port Dalhousie, said it was but an indifferent bearer with him. Mr. Arnold, of Paris, said his experience with it was unfavourable. Mr. Graydon said he had a tree only three years planted, which bloomed finely this year but did not fruit. Mr. Taylor said it succeeded well with him. Judge Logie said that his bears a fair crop every year.—Left on the list for further trial.

Moved by Mr. W. H. Read, seconded by Mr. Taylor,—That the Beurre Clairgeau be added to the list for general cultivation.

Mr. Read found the tree hardy, and a good bearer; fruit of high flavour. Mr. Holton said it was comparatively a new pear, and, though very promising, had hardly been sufficiently tested in different localities. The tree grew well on pear and quince, to the extent of his

observation, which had been only four years. Mr. Taylor's trees were dwarfs, but he was very favourably impressed with it, and believed it to be a very valuable pear.—Ordered on the list for further trial.

Osband's Summer.—Mr. Taylor said this was a fine fruit, and one of the best summer varieties. His tree, however, was dead, killed by the blight. Mr. Read and Mr. Arnold, of Paris, had also lost their trees from the same cause. Left for further trial.

Beurre Giffard.—Mr. Holton thought the pear worthy of being placed on the list for general cultivation. Mr. Read has fruited it on the pear stock, and found it one of the best. Messrs. Taylor and Sootizer remarked that the trees on the clay soil were not subject to blight. Left for further trial.

Grey Doyenne.—Mr. Holton thought this a fine fruit, and preferred it to white Doyenne; is a better grower than the *Beurre Giffard*. Mr. Pawling said the tree did not grow as well as the white Doyenne, but the fruit was finer. It grew on the quince better than the Blood-good. Ordered on the list for further trial.

Beurre Diez.—T. H. Graydon—It is a fine fruit on the quince, good size and fine flavour. W. Holton—A fine pear on the quince, long lived and fine grower. W. H. Read—It makes a noble tree on the pear, and will keep till Christmas. Mr. Sootizer, of Thorold, finds it an excellent variety. Judge Logie has one tree on the quince a crooked and slow grower, but the fruit very fine. Placed on list for further trial.

Some Seedling Pears exhibited by W. H. Read, were referred to Committee of Seedlings and new Grapes.

Mr. Holton called the attention of the meeting to some samples of the *McVain Pear*, now ripe, stating that the tree seems to be very hardy and a good grower, and promises to be valuable at the north; the fruit is of good size and medium quality. He also showed the *Beurre d'Anjou*, and remarked that he thought it a very promising pear; tree grows well, makes a nice dwarf, seems hardy, and bears a medium good crop with him every year. He also exhibited some delicious specimens of the *Belle Lucrative*, which were tasted by the members and soon disappeared.

Roslizer.—W. Holton thought this a very fine pear, small, ripening on the 20th September; is a very sweet, spicy fruit, and the tree very hardy, fruit grows in clusters. M. Y. Keating considers it a very fine variety. Mr. Sootizer finds it a good bearer, and hardy tree, and prizes it highly. Ordered on the list for further trial.

Mr. Graydon read the report of the Committee on grapes and fruits:

Report of the Committee appointed to examine the Seedling and New Grapes Exhibited, and the Seedling Pears.

Ontario, was excluded from the list of Seed-

ling, on the ground that it had been exhibited for many years.

Prince of Wales, compared with the Ontario seemed to have less seeds in the berry; berry large. Decided by three to two as not sufficiently distinct from Ontario.

Black Jack, good seedling of Isabella.

Silver Cluster, size small, rather good, sweet.

Hattie, sweet, berry small, foreign flavour, bunch above medium.

Hybrid, between Ontario and Delaware, skin thick, pulpy, good flavour.

Shaw's Seedling, equal to Isabella, free from pulp.

Cuyahoga, skin thick, rather pulpy, fair quality.

Rodgers' Hybrid, No. 15, not pulpy, best of the new grapes, berry and bunch large.

Rodgers' Hybrid No. 13, not ripe, berry large and bunch medium.

Anna, white, too large for this locality.

White Portugal, flavour good, skin thin.

Elsinberg, not worthy of cultivation.

Seedling Pear, No. 1, recommended that it be called the "*Dalhousie*," and the grower requested to lay specimens of fruit before the Society next year.

T. H. GRAYDON, *Chairman*.

Concord.—Mr. Graydon thinks it will be valuable for market, but will not keep long; good bunch and berry. Mr. Taylor says it is a fine grape, one of the best, bunch large, and berry handsomely covered with bloom. W. H. Read—it is very prolific and hardy. Mr. Bruce, good market variety, hardy. Mr. Arnold—one of the best for the north, equally hardy with the Clinton. George Read thinks it well worth cultivating. Mr. Holton—a nice grape, worthy of cultivation. Mr. Beadle—is growing in favour with me every year, perfectly hardy and free from disease. Placed on the list for cultivation.

Diana.—W. H. Read—ripens late, unequally, not as hardy as Concord. Mr. Taylor—I am partial to this variety, but believe it needs a warm soil and favourable aspect. Mr. Graydon—am very much in favour of it, ripens after the Delaware, three weeks after. Mr. Bruce—succeeds pretty well in Hamilton; not yet quite ripe with me. Mr. Arnold—it cannot be depended upon at Paris; there are many green berries in the bunches, and subject to mildew and rot. Mr. Keating—vine hardy, and worthy of cultivation. Mr. Pawling—not yet fruited it, but believe it requires favourable locality. Mr. Holton—ripens uniformly, is a superior grape when well ripened. On list for further trial.

Delaware.—W. H. Read—this is as hardy as the Concord or Clinton, very good bearer, medium cluster, small berry, excellent quality, sweet and delicious. Mr. Taylor—is everything that is desirable in a grape, except size—the best of all out-of-door grapes; the foliage some-

times sun-scalds. Mr. Graydon—excellent for general culture, hardy and good, but I am not partial to the flavour, too much like sugar and water. Mr. Bruce—the best grape we have, perfectly hardy, and will perhaps ripen in any part of the Province. Mr. Arnold—fruited this year for first time, the best of our hardy grapes, Mr. Keating—very valuable. Mr. Geo. Read—just suits my taste. Mr. Pawling—one of the very best. Mr. Holton—only a pity that it is not a little larger. Mr. Beadle—it is very promising. Ordered on list for general cultivation.

Hartford Prolific.—A fair grape, early, but subject to drop from the bunch, unless grown on the new wood. Mr. Taylor—a good early black grape. Mr. Bruce—very hardy, early. Mr. Arnold—is the earliest of all grapes; has but one fault of dropping from the bunch. Mr. Pawling—perfectly hardy, and the earliest of all. Mr. Holton—a valuable variety, particularly on account of its earliness. Received for general cultivation.

Rebecca.—W. H. Read—the best American white grape, but hardly worthy of general cultivation. Mr. Taylor—it ripens after the Delaware, and is a fine grape, but requires a favourable locality. Mr. Graydon, would call it an Amateur's grape, requiring favourable aspect and soil. Mr. Bruce—is a good grape; will ripen at Hamilton. Mr. Arnold—it seems to need a warmer corner; the bunch and berry improve as the vine acquires age. Mr. Holton—a very fine grape, but seems to require nourishing. Left on list for further trial.

Allan's Hybrid.—(White)—Mr. Taylor has furnished it this season; was ripe about the 15th September, is a fine white grape, high flavoured, likely to be a good bearer, finest out-door white grape I have tasted; cannot speak as to its hardness. Is a hybrid between the Isabella and Golden Chasselas, and shows the foliage of the Chasselas. Ordered on list for trial.

Rodgers' Hybrid No. 15.—Mr. Graydon—is very hardy, early, fine flavour, large berry and fine branch, well shouldered. His No. 3 is earlier, but not so large a bunch, though larger berries, a little foxy. No. 13 is a handsome white grape, large sized berry and large cluster. Would recommend them for trial, inasmuch as they are hybrids from our native sorts.

Ontario.—W. H. Read—is a seedling of my own raising. I saved above a pint of seed, saved them from several varieties, including Isabella, a grape grown by Mr. Solomon Hill, and some of my own hybridizing, but I cannot say from which particular seed it grew, as I planted them altogether, and it is quite possible that it is a seedling from Mr. Hill's grape. My vine is about ten years old, is growing in soil prepared with the plough without any manuring, in the lower part of my door-yard that has not been cropped for many years. Mr. Solomon Hill—I have had my vine 18 or 20 years, bought it of a travelling pedlar for Virginia White Grape; I grew it two years in the

garden, I then moved it to my new garden, in a clay soil, and it is now standing there. Has had very little attention paid to it within the last year. I only trimmed and manured it. Last season I ringed it just after the berries were nicely set, and found it made the berries but little larger. These berries now exhibited had no special care this season, were not ringed nor thinned out in any way. Mr. Arnold—put Union Village, Ontario, and Mr. Hill's grape side by side within four feet of each other, and in all respects equally situated. They fruited this year for the first time, and neither my friends who examined them nor I have been able to perceive any difference in them all, either in foliage, fruit, or flavour. It is at least ten days earlier than the Isabella. Mr. Taylor—I have Ontario and Union Village, and if my Union Village is true to name, they are certainly different varieties. Ontario is quite a desirable grape, it is earlier by ten days and decidedly superior to the Isabella. Mr. Graydon—it is a good grape when you want a large bunch for show, not for wine or table use. Mr. Holton—I think it very desirable that we have further evidence as to the identity of these grapes with the Union Village, and suggest that the subject rest until another year shall give us further information.

These varieties were tasted by members, but not having an opportunity of seeing foliage and branch; the meeting concurred in Mr. Holton's suggestion.

The Silver Cluster was tasted by members of the Association and found to be sweet.

Hattie.—Also tasted by members and found to be fine flavoured, sweet and rich.

Prince of Wales and Black Jack were also tasted. Mr. W. H. Read, who exhibited the above seedlings, was requested to report progress next year, and exhibit specimens of the fruit again, with branch and foliage attached.

Adjourned to meet at Hamilton, on 3rd Wednesday of January, (20th), 1864.

PEARS ON GRAFTS.

MR. EDITOR,—Your remarks on my communication respecting pears on grafts, were not very complimentary. You first say you think I must have made a mistake, or in other words, my statement was not worthy of credit. In the next place you account for the way in which the mistake occurred, no doubt to your own satisfaction: that a shoot of the seedling stock on which the Doyenne had been grafted had grown up and been allowed to grow unobserved for years, and that the grafts had been taken from it under the impression that it was the Doyenne. Had there been a possibility of a mistake I should not have troubled you with my communication; but, knowing there was room, I wrote in the hopes that you or some of your readers could solve what was, and still is to me, a mystery. With respect

to the way in which you supposed I made the mistake, while I do not profess to be a scientific fruit grower, I am not so negligent as to allow a shoot to grow unnoticed for years, until it was so large that I could mistake it for the tree. But to set the idea of the tree at rest, the tree from which the grafts were taken is a dwarf, and I have not seen a Quince root seed up shoots, although they may do so; but suppose such had been the case, and that I had made a mistake and taken my grafts from the quince instead of the pear; and, suppose further, the Quince had produced pears, I fancy you would have thought it as incredible, that a quince graft would produce pears, as that the pears furnished you grew on a graft of the Doyenne. The cuttings from both trees I sent you by a friend will, I think, satisfy any one that in bark, foliage, and growth, they are the same. In conclusion, I think your remarks were not calculated to elicit information or induce people to apply for it through the columns of your paper.

Respectfully yours,

L. FAIRBANKS.

Whitby, 12th October, 1863.

[It was very far from our intention to treat our correspondent's queries with indifference or discourtesy, and the few remarks we appended to his former communication will not fairly bear any such interpretation. We thought it possible that some involuntary error of observation had been made, but as he expresses himself confident such was not the case, we can only express our inability to account for the phenomenon. Perhaps some of our readers better versed in these matters than ourselves will favour us with an explanation. Mr. Fairbank's previous letter, with our remarks appended, appeared in the September number of the *Agriculturist*, page 359.—Eds.]

PEAR CULTURE.

We give below the statement of Mr. R. B. Werden, of Picton, accompanying his entry of the collection of Pears, to which "Dr. Beadle's prize" of thirty-five pear trees suitable for planting out was awarded at the late Provincial Exhibition at Kingston. The statement gives the particulars in reference to each variety, as required by the conditions of the competition.

Details of Pears entered for Dr. Beadle's Prize.

Flemish Beauty, No. 1.—From over 60 varieties that I have tested, this gives the most satisfaction, being a good pear and perfectly hardy on pear stock.

Beaure D. Amalis.—Good pear, great bearer, and quite hardy on both pear and quince.

Passe Colmar.—Good winter pear, quite hardy, best on pear stock.

Summer Bon Cretien.—Not very good, but tree hardy on pears and stock.

Oswego Beurre.—Good; tree not very hardy on pear.

Seckle.—Quality best; not very hardy on pear and quince.

Tyson.—Good; not very hardy on pear.

Swan's Orange.—Good large pear; tree quite hardy on pear.

Louise Bon d'Jersey.—Quality best; not hardy on pear and quince.

White Doyenne.—Quality best; not hardy.

Easter Beurre.—Does not succeed here, fruit nor tree, quince.

English Jargonelle.—Good; tree quite hardy, pear stock.

Summer Rose.—Pear not very good; tree not very hardy.

Winter Nellis.—Quality best; tree quite hardy, pear stock.

Soldat Laboureur.—Good; tree hardy, pear stock.

Desnonnes.—Very good; tree hardy, pear and quince.

Glout Morceau.—Quality best; rather tender, pear and quince.

Beurre Diel.—Good; rather tender, pear and quince.

Prince's St. Germain.—Good; rather tender, pear.

Bartlett.—Quality best; tree too tender, pear and quince.

Doyenne D'Ete.—Best early pear, hardy, pear stock.

These pears are all grown on a loamy soil, with a limestone bottom,—Township of Hallowell, Prince Edward county, Lot No. 23, Military Tract.

Post office Address, Picton.

R. B. WERDEN.

August 26, 1863.

THE FLAVOR OF FRUIT IMPROVED BY THINNING.

In the *Journal of Horticulture* are the following very judicious remarks on the propriety of thinning fruit:—"I am quite well aware that I need not tell such men as Mr. Weaver that the flavor of fruit, barring extreme sunless seasons, is entirely under the control of the gardener. A clever man can command flavor; a dull man when he finds his fruit flavorless, makes idle excuses, which should never be listened to. If a tree trained to a wall be allowed to ripen, say ten dozen of fruit, when five or six dozen only should have been left, they, although they may be of a fair size and color, suffer in flavor to an extent scarcely credible. How often has the gardener

had occasion to complain of his pears not being good, although produced on fine trees trained against walls? He complains of the season; but it is owing in most cases to the trees being allowed to bear just double the number they ought to have done. The following ought to be inscribed on every wall, and in every fruit and orchard house:—*By thinning you make indifferent fruit good. By crowding you make good fruit bad.* If very fine and high flavored fruit is wished for, a tree capable of bearing three dozen of medium-sized peaches should be allowed to bear only twelve or fifteen. This thinning is terrible work for the amateur. It is like drawing a tooth, and every fruit that falls to the ground creates a pang but it must be done. A small, sharp penknife is the best implement to employ, and is much better than tearing off the fruit with the finger and thumb. A well-formed peach or nectarine tree, be it bush or pyramid, with its fruit properly thinned and nearly ripe, is one of the most beautiful objects the skill of the cultivator can produce. No camelia, or orchid, or rose tree can be more so. Yet this is an object for which some (too many) gardeners feel contempt."

THE GRAPE INTEREST:—The Sandusky *Register* says that some idea of the magnitude of the grape interest thereabouts may be understood from a few simple facts. There are probably in bearing the present season, on the islands and mainland, about 1,000 acres—400 on Kelly's Island alone—of which about 700 acres are in full bearing. Another year the quantity in bearing will probably reach 2,000 acres, with a larger setting out than ever before. About 2,000,000 cuttings were made on Kelly's Island alone last Spring; probably in this entire grape region the number reached to 5,000,000.

Veterinary Department.

ON THE EXHIBITION OF ANIMAL FOOD TO HERBIVOROUS ANIMALS IN VETERINARY PRACTICE.

BY PROFESSOR VARNELL, LONDON VETERINARY COLLEGE.

A few months ago I was requested to see a horse, the property of a gentleman living at Highbury, which at the time was under the care of a Veterinary surgeon. It is not my intention to describe the particulars of the case, as they have no important bearing on the circumstances which I have lately been put in possession of relative to the horse's recovery. I may, however, remark, that at the time I saw the horse he was suffering severely from what I considered intestinal obstruction, and I

was told that the attack had then lasted three days with slight intermissions. I must confess I was unable to diagnose the case to my satisfaction, but my prognosis however was very unfavourable. I suggested a change in the treatment which I believe was carried out to the letter. I heard no more of the case until I received the following communication from the owner of the horse, informing me that the animal had recovered. I have no doubt, however, that for a time he was very weak and ill. I now come to the circumstance which to me is interesting, and I am inclined to think may be of some practical importance to others.

21st April, 1863.

SIR,—You will remember the circumstance of coming up to see one of my carriage horses, which we deemed to be "in extremis." You saw it I think on the Saturday night, and on the following day the poor animal seemed much worse, he sat up on his haunches, groaned, or rather bellowed with pain. At times he would bury his head in the straw, then rise partly and sit on his haunches again, and so continue for hours. When we got a passage through his bowels, he seemed a trifle better, but alternated between improvement and the contrary for days. My cook was making some strong stock for soup, and the idea struck my boy of giving the horse some. To his surprise the horse readily took it, and afterwards from two to three weeks I had a shin of beef boiled down for him, which he greedily took, and neighed for as soon as the smell came to his notice. He is now quite well, although, as yet, I have not worked him. I was talking to my friend Mr. Solly, of the St. Thomas Hospital, the other day, and he said I ought to write and tell you about it, and to give his name as being the instigator of my doing so.

I am, Sir, &c.

To Professor Varnell.

I think the readers of the *Veterinarian* will agree with me that this incident is worth recording. I am not sure that animal food in a soluble form may not become a valuable agent in our practice. We must allow that its composition and solubility admit of its being readily received into the organism and assimilated, and that it would be more suitable to renovate exhausted vital powers than vegetable food.—May it not then be resorted to with advantage for the purpose of averting vital exhaustion in painful articular diseases, copious discharges, extensive loss of blood, and other circumstances which might be mentioned, I would suggest that a trial be made of meat broths in cases where much wasting has taken place. We need not be over particular in removing all the fat, for as an element of respiration this may all be beneficial.—*Veterinarian*.

REASONS WHY HORSES DO NOT BREATHE THROUGH THEIR MOUTHS:—The soft palate, as it is technically called, *velum palati*, is a sort of curtain affixed to the roof of the mouth, in the region of the palatine arch; it has a free edge which rests upon the epiglottis. It slants in a posterior direction, so that anything in the shape of food coming from the mouth, raises and pushes it backward; but anything coming from the œsophagus or trachea, pushes it forward and downward, closes it, and thus prevents all egress. So that air is expired and respired through the nasal outlet, and all matter vomited from the stomach must also be ejected through the nostrils. In the act of coughing, however, which is a spasmodic action, the air returns in body and with force sufficient to raise the *velum palati*, so that a passage through the mouth is, at the moment, secured.

The mechanism of the palate is as follows: Its composition is nearly the same as that of the hard palate, yet abounds more in glandular substance and muscular fibre; by means of the levator palati, its substance is raised. On the lateral and internal portion of the membrane we find bundles of muscular fibres, constituting a pair of muscles known as *depressors*, which aid in retaining the palate in its place, viz., on the epiglottis. From the above brief remarks the reader will perceive that it is not natural for a horse to breathe through his mouth.

DIPHTHERIA AMONG ARMY HORSES.—A new disease seems to have lately broken out among the horses in some of the army camps. J. H. Thompson, surgeon of the Thirty-ninth New York Volunteers, stationed at Williams, Va., thus describes its symptoms and effect:—"Four horses died in one battery within a few hours of each other. They appeared well in the morning, refused a portion of their oats at mid-day and in the evening could not swallow anything; rapid exhaustion followed, and in a few hours they died. On opening the animals, the mouth, larynx, and trachea were found covered with diphtheritic membranes somewhat thicker and more tenacious, but in other respects resembling that found in the human subject in cases of diphtheria. If this is diphtheria in the horse, and I know of nothing else it is likely to be, is it with them a new disease? Or is it only new to me, because I am ignorant of its previous existence? Certainly none of the persons having charge of the Government horses around here know anything of the disease." It is to be hoped that this notice will arrest the attention of scientific veterinary surgeons, and that they will be able to apply a remedy.→ *Scientific American*.

LINEN VERSUS COTTON.—The Belfast (Ireland) *Northern Whig* shows that there are now linens of a coarse kind not only relatively absolutely cheaper than cotton. Samples are shown of an Irish power loom linen at five and one quarter penny per yard, and calico at five and seven eighths penny per yard. The linen is undoubtedly the better and more durable, as well as the cheaper article of the two, though naturally somewhat coarser.

Transactions.

LIST OF PRIZES AWARDED AT THE PROVINCIAL EXHIBITION AT KINGSTON. SEPT. 22 TO 25, 1863.

HORSES.

CLASS I.—BLOOD HORSES—(15 Entries).

Judges.—Wm. O'Brien, Barrie; Henry Battell, Cobourg; and G. Taylor, Belleville.

Best thorough-bred stallion, C. J. Douglass, Whitechurch, "The Tester," imported from England, 1863, \$120; 2nd do, C. Arkland, Oshawa, "Kennett," \$25; 3rd do, Simon Beattie, Markham, "Young Irish Birdcatcher," \$12.

Best thorough-bred stallion of any age, C. J. Douglas, Whitechurch, "The Tester," Diploma.

REMARKS BY JUDGES.—The judges beg to say that the show of thorough-bred stallions was unusually good, better than they have seen in Upper Canada for many years, there being several horses of new importation, excellent blood and first rate quality.

CLASS II.—AGRICULTURAL HORSES—(Entries).

Judges.—John Tilt, Toronto Township; Peter Wood, Picton; George Milne, Brougham.

Best stallion for agricultural purposes, Thomas Gowland, Seneca, \$40; 2nd do, George Gowland, Vanghan, \$25; 3rd do, Hector Scott, Darlington.

Best three years old stallion, Henry Smith, Kingston, \$22.

Best two years old stallion, R. Graham, Markham, \$14; 2nd do, Jas. Nimmo, Camden East, \$10.

Best agricultural stallion any age, Thomas Gowland, Seneca, Diploma.

Best three years old filly, Reuben Spooner, Glenburnie, \$18.

Best two years old filly, F. Van Slyck, Ernestown, \$14; 2nd do, William Thomson, E. Whitby, \$9; 3rd do, James Nimmo, Camden East, \$5.

Best brood mare and foal, or evidence that the foal has been lost, Duncan McConnachie, Clark, \$22; 2nd do, P. R. Wright, Cobourg, \$14; 3rd do, M. Willburn, Kingston, \$6.

Best span matched farm or team horses, H. M. Wright, Camden, \$20; 2nd do W. H. Rankin, Kingston, \$15; 3rd do, T. Donovan, Kingston, \$10.

REMARK.—The judges wish to remark that in the above class they regret that through the negligence of the owners in not bringing their animals on the ground, some of the entries have not been judged.

CLASS III.—ROAD OR CARRIAGE HORSES— (250 Entries).

Judges.—Ira Morgan, Osgoode; R. Crysler, Delhi, Norfolk; and Francis Smith, Newmarket.

Best roadster or carriage stallion, four years old and upwards, James Armstrong, Yarmouth, \$40; 2nd do, C. L. Waggoner, Kingston, \$25; 3rd do, Joseph Pierson, Hillier, \$12.

Best do, three years old, John Levitt, York Tp., \$22.

Best do, 2 years old; S. Hatton, Port Hope, \$14; 2nd do, Wm. Stanton, Picton, \$10; 3rd do, George Lake, Camden East.

Best yearling colt, F. Graham, Belleville, \$8; 3rd do, James Kirk, Kingston, \$4.

Best stallion of any age, Jas. Armstrong, Yarmouth, Diploma.

Best French Canadian stallion, Jas Johnston, Toronto tp., \$30; 2nd do, W. O'Reilly, Kingston tp., \$20; 3rd do, I. N. Rose, Morrisburg, \$10.

Best three years old roadster filly, R. Spooner, Glenburnie, \$18; 2nd do, L. F. Fralick, Ernestown, \$11.

Best yearling filly, P. McCallum, Pittsburg, \$8

Best brood mare and foal, or evidence of foal having been lost, Felix Graham, Belleville, \$22; 2nd do, John N. Amey, Camden, \$14; 3rd do, Alex. Stewart, Kingston, \$6.

Best pair of matched carriage horses, G. S. Daintry, Cobourg, \$20; 2nd do, H. M. Wright, Camden, \$15; 3rd do, R. C. Gorrsline, Tyendinaga, \$10.

Best single carriage horse in harness, J. H. Allan, Picton, \$10; 2nd do, T. E. Young, Athol, \$8; 3rd do, W. W. Cunningham, Hallowell, \$6.

Best saddle horse, E. Howard, Lennox, \$10; 2nd do, John Duff, Kingston, \$8; 3rd do, John Duff, Kingston, \$6.

EXTRA PRIZES—New Forest poney, B. A. McDonald, Toronto, \$4; pair of ponies, G. Webb, Colborne, \$3; poney, A. D. Fraser, S. Fredericksburgh, \$2.

CLASS IV.—HEAVY DRAUGHT HORSES—(42 Entries).

Judges.—James Biggins, Clinton; T. Dempster, Gananoque; and A. Alcorn, Cobourg.

Best heavy draught stallion, Robt. Farris, E. Whitby, \$40; 2nd do, Joseph Thompson, Markham, \$25; 3rd do, John Sanderson, Markham, \$12.

Best 3 years old stallion, John Sanderson, Markham, \$22; 2nd do, D. McConnachie, Clark, \$14.

Best 2 years old stallion, John Miller, Pickering, \$14; 2nd do, James Nimmo, Camden, \$10.

Best draught stallion, any age, John Miller, Pickering, Diploma.

Best 3 years old filly, Thomas Worden, Darlington, \$18; 2nd do, James Logan, Hochelaga, C. E., \$11; 3rd do, Reuben Spooner, Glenburnie, \$6.

Best 2 years old filly, James Logan, Hochelaga, C. E., \$14; 2nd do, James Logan, Hochelaga, \$9.

Best Brood mare and foal, or evidence that the foal has been lost, John Miller, Pickering, \$22; 2nd do James Nimmo, Camden E., \$14.

CLASS V.—THE PRINCE OF WALES' PRIZE— HORSE OF ANY AGE OR BREED.—(27 Entries.)

Judges.—Ira Morgan, R. Crysler, John Tilt, Francis Smith, James Biggins, Henry Battell, and Alex. Alcorn.

For the best stallion of any age or blood; prize presented by his Royal Highness the Prince of Wales, James Armstrong, Yarmouth, \$60.

REMARK.—The judges of horses feel it incumbent on them to express their opinion of the satisfactory manner in which the deputy superintendents performed their arduous duties, and the assistance they gave to the judges in carrying out the necessary arrangements and work of their department

CATTLE.

CLASS VI.—DURHAMS—(78 Entries).

Judges.—John McCrea, Guelph; Wm. Stork, Gananoque; Wm. Thorne, Lindsay; J. P. Wheler, Scarboro; A. Alcorn, Cobourg; and C. Jordison, Belleville.

Best bull, 4 years old and upwards, John Bellwood, Clarke, "Robin Hood," \$36; 2nd do, Wm. Percival, Amherst Island, "Fancy," \$24; 3rd do, John Flanigan, Kingston, "St. Patrick," \$16.

Best 3 years old bull, John Miller, Pickering, "Canadian Punch," \$32; 2nd do, Geo. H. Phillips, Prescott, "Master Maraudan," \$20; 3rd do, Wm. Percival, Amherst Island, "Maxwell," \$12.

Best 2 years old bull, John Snell, Chinguacousy, "Baron Solway," \$24; 2nd do, Wm. Woods, Thurlow, "Commodore," \$16; 3rd do, Thomas Stock, Flamborough East, "Beauregard," \$8.

Best 1 year old bull, John Miller, Pickering, "Prince Charlie," \$20; 2nd do, John Snell, Chinguacousy, "Friar John," \$12; 3rd do, John Bellwood, Clarke, "Wild Prince," \$7.

Best bull calf [under 1 year], John Snell, Chinguacousy, "Clayton," \$16; 2nd do, do, "Alto," \$10; 3rd do, John Miller, Pickering, "Hubback," \$6.

Best bull of any age, John Snell, Chinguacousy, "Baron Solway," Diploma.

Best Cow, F. W. Stone, Guelph, "Isabella 4th," \$20; 2nd do, Thos. Stock, East Flamboro, "Betsy," \$12; 3rd do, F. W. Stone, Guelph, "Marchioness of Gloster," \$8. Highly commended, Dr. G. H. Phillips, Prescott, "Fragrance."

Best 3 years old cow, F. W. Stone, Guelph, "Verbena," \$16; 2nd do, Jas. Vine, Louth, "Blossom," \$10; 3rd do, Simon Beattie, Markham, "Sarah," \$6.

Best 2 years old heifer, F. W. Stone, Guelph, "Maid of Honor," \$12; 2nd do, do, do, "Sanspareil 7th," \$8; 3rd do, Henry Jennings, Markham, "Lady Ann," \$5.

Best 1 year old heifer, F. W. Stone, Guelph, "Marchioness of Gloster 2d," \$10; 2nd do, do, do, "Isabella 7th," \$6; 3rd do, do, do, "Isabella 8th," \$5.

Best heifer calf [under 1 year], F. W. Stone, "Sanspareil 10th," \$6; 2nd do, Jno. Snell, Chinguacousy, "Mary Grey," \$4; 3rd do, F. W. Stone, Guelph, "Duchess of Oxford 3d," \$2.

REMARK.—The judges of Durham cattle regret that so few animals were exhibited in

this class, and that even of those entered so many were missing in the show ground, even on Wednesday, to which day we left the decisions open.

CLASS VII.—DEVONS—(45 Entries).

Judges.—Robert Currie, St. Catharines; Wm. Penhall, Reach; and Martin Johnson, Barrie.

Best bull 4 years old and upwards, George Mann, Bowmanville, "Devonian," \$36; 2nd do, Chris. Courtice, Darlington, "Conquerer," \$24; 3rd do, do, do, "Duke," \$16.

Best 3 years old bull, H. Spencer, Whitby, "Prince of Wales," \$32; 2nd do, Thomas Allan, Whitby, "Rufus," \$20; 3rd do, Jno. Goodall, Dumfries, "Napoleon," \$12.

Best 2 years old bull, Geo McGill, East Whitby, "Garibaldi," \$24; 2nd do, Nathan Choate, Hope, "Young Torrance," \$16; 3rd do, do, do, "Sir Luton 4th," \$8.

Best one year old bull, Chris. Courtice, Darlington, "Governor," \$20; 2nd do, Thos. Allen, Whitby, "Prince of Wales," \$12; 3rd do, Chris. Courtice, Darlington, "Prince Alfred," \$7.

Best bull calf, under one year, Chris. Courtice, Darlington, "Emperor," \$16; 2nd do, do, do, "General Pelissier," \$10; 3rd do, N. Choate, Hope, "Sir John," \$6.

Best bull of any age, H. Spencer, Whitby, "Prince of Wales," Diploma.

Best cow, C. Courtice, Darlington, "State-ly," \$20; 2nd do, do, do, "Beauty," \$12; 3rd do, do, do, "Graceful," \$8.

Best 3 years old cow, C. Courtice, Darlington, "Gay Lass," \$16.

Best 2 years old heifer, George McGill, East Whitby, "Primrose," \$12; 2nd do, C. Courtice, Darlington, "Graceful 2d," \$8.

Best one year old heifer, C. Courtice, Darlington, "Florence Nightingale," \$10; 2nd do, do, do, "Picture," \$6.

Best heifer calf, under one year, C. Courtice, Darlington, \$6; 2nd do, do, do, \$4.

CLASS VIII.—HEREFORDS,—(22 Entries.)

Judges.—James Croil, Morrisburgh; and C. W. Hufman, Ernestown.

Best 3 years old bull, F. W. Stone, Guelph, "Patriot," \$32.

Best 2 years old bull, F. W. Stone, Guelph, "Sailor," \$24.

Best 1 year old bull, F. W. Stone, Guelph, "Guelph," \$20.

Best bull calf under 1 year, F. W. Stone, Guelph, \$16; 2nd do, do, \$10.

Best bull of any age, F. W. Stone, Guelph, "Sailor," Dip.

Best cow, F. W. Stone, Guelph, "Bonny Lass," \$20; 2nd do, do, do, "Hebe," \$12; 3rd do, do, do, "Verbena," \$8.

Best 3 years old cow, F. W. Stone, Guelph, "Graceful," \$16; 2nd do, do, do, "Gentle 2d," \$10.

Best 2 years old heifer, F. W. Stone, Guelph, "Sweetheart," \$12; 2nd do, do, do, "Peach," \$8.

Best 1 year old heifer, do, do, "Baroness 2d," \$10; 2nd do, do, do, "Necklace," \$6; 3rd do, do, do, "Gentle 3d," \$4.

Best heifer calf under 1 year, do, do, "Hebe 2d," \$6; 2nd do, do, do, \$4.

CLASS IX.—AYRSHIRES.—(90 Entries.)

Judges.—C. H. Bell, Perth, Lanark; Wm. Smith, Frankville; Richard Arnold, Brockville.

Best bull 4 years old and upwards, C. D. M. Globinsky, Montreal, "Hero," \$36; 2nd do, Arch. Fraser, Charlottenburg, \$24.

Best 3 years old bull, James Nimmo, Camden E., "Sir W. Scott," \$32; 2nd do, Jas. Logan, Hochelaga, C. E. "Fusileer," \$20; 3rd do, G. K. Morton, Morton, "Prince of Wales," \$12.

Best 2 years old bull, J. P. Wheler, Scarboro, "Carriek Farmer," \$24.

Best 1 year old bull, Jas. Logan, Hochelaga, "Sir Colin 2d," \$20; 2nd do, G. K. Morton, Morton, "President Lincoln," \$12; 3rd do, P. R. Wright, Cobourg, "John A.," \$7.

Best bull calf under 1 year, Geo. Miller, Markham, \$16; 2nd do, John Boyes, Pittsburgh, \$10.

Best bull of any age, Jas. Nimmo, Camden E., "Sir W. Scott, diploma.

Best cow, P. R. Wright, Cobourg, "Peerless," \$20; 2nd do, Jas. Logan, Hochelaga, "Belle," \$12; 3rd do, J. P. Wheler, Scarboro, "Beauty," \$8.

Best 3 years old cow, P. R. Wright, Cobourg, "Nelly Brown," \$16; 2nd do, Jas. Logan, Hochelaga, "Bonny Jean," \$10; 3rd do, J. P. Wheler, Scarboro, "Mary Gray," \$6.

Best 2 years old heifer, James Logan, Montreal, "Matilda," \$12; 2nd do, John Miller, Pickering, "Dolly," \$8; 3rd do, G. K. Morton, Morton, "Beauty," \$4.

Best 1 year old heifer, S. Beattie, Markham, "Mountain Maid," \$10; 2nd do, P. R. Wright, Cobourg, "Bessy Bell," \$6; 3rd do, do, do, "Mary Gray," \$4.

Best heifer calf under 1 year, J. Boyes, Pittsburgh, \$6; 2nd do, G. K. Morton, Morton, "Gesty," \$4; 3rd do, P. R. Wright, Cobourg, "Bridesmaid," \$2.

CLASS X.—GALLOWAY, AND POLLED ANGUS, OR ABERDEEN CATTLE.—(56 Entries.)

Judges.—John Carveth, Port Hope; Geo. Roddick, Port Hope; Charles Girvin, Goderich.

Best bull four years old and upwards, John Snell, Chinguacousy, "Black Jock," \$36; 2nd do, James Nimmo, Camden East, "Prince of Wales," \$24.

Best three years old bull, George Anderson, Stanley, "Douglass," \$32; 2nd do, Robert Currie, Grantham, "Clear Grit," \$20; 3rd do, E. W. Thomson, York, "Prince of Wales," \$12.

Best two years old bull, John McClain, Essa, "Rob Roy," \$24; 2nd do, Allan Bond, Storrington, \$16.

Best one year old bull, James Nimmo, Camden East, "Prince Alfred," \$20; 2nd do, John Snell, Chinguacousy, "Malcolm," \$12.

Best bull calf, under one year, do, do, "Roderich Dhu," \$16; 2nd do, do, do, "Robert Bruce," \$10; 3rd do, M. Johnson, Barrie, \$6.

Best bull of any age, George Anderson, Stanley, "Douglass," Diploma.

Best cow, John Snell, Chinguacousy, "Blooming Heather," \$20; 2nd do, James Nimmo, Camden East, "Queen iVictoria," \$12; 3rd do, do, do, "Lady Adde," \$8.

Best three years old cow, George Miller, Markham, \$16.

Best two years old heifer, John Snell, Chinguacousy, "Levina," \$12; 2nd do, James Nimmo, Camden East, "Jenny Lind," \$8; 3rd do, George Miller, Markham, \$5.

Best one year old heifer, John Snell, Chinguacousy, "Pocahontas," \$10; 2nd do, James Nimmo, Camden East, "Mary Allen," \$6; 3rd do, John Snell, Chinguacousy, "Cherry," \$4.

Best heifer calf under one year, George Miller, Markham, \$6; 2nd do, John Snell, Chinguacousy, \$4; 3rd do, George Miller, Markham, \$2.

REMARKS.—The judges in the class of Polled Angus and Galloway cattle consider that the two breeds should be distinctly classified, as a variety of opinions appear to exist as to which of the two is best, and dissatisfaction is felt by exhibitors towards the

judges for giving preference to the class they think best adapted to the country.

CLASS XI.—GRADE CATTLE—(67 Entries)

Judges.—A. D. Fraser, Lennox; James Archibald, North Hastings; E. W. Thomson, York Township.

Best grade cow, Thomas Stock, E. Flamboro, \$20; 2nd do, do, do, \$12; 3rd do, S. Shibley, Portland, \$8.

Best 3 years old cow, James Bellwood, Clarke, \$16; 2nd do, Wm. Starke, Pittsburgh, \$10; 3rd do, R. Spocner, Kingston, \$6.

Best 2 years old heifer, James Fisher, Portsmouth, \$12; 2nd do, James Bellwood, Clarke, \$8, 3rd do. Wm. Starke, Pittsburgh, \$5.

Best 1 year old heifer, W. Miller, jr, Pickering, \$10; 2nd do, James Bellwood, Clarke, \$6; 3rd do, James Fisher, Portsmouth, \$4.

Best heifer calf, under 1 year, Isaac N. Rose, Morrisburgh, \$6; 2nd do, Wm. Perceval, Amherst Island, \$4; 3rd do I. N. Rose, Morrisburgh, \$2.

THE FERGUS CUP.

Best grade heifer, not more than two years old on March 1, 1863, the produce of a pure bred Durham bull, having a recorded pedigree, and of a cow of any breed not more than one remove from thorough bred. Prize presented by Hon. A. J. Fergusson Blair, W. Miller, jr., Pickering, **SILVER CUP.**

REMARK BY JUDGES.—The grade cattle altogether are of a superior quality, and would pass among judges generally for thorough bred.

CLASS XII.—FAT AND WORKING CATTLE, ANY BREED—(32 Entries).

Judges.—P. Armstrong, Toronto; Robert Best, Niagara; H. Andrews, Kingston; and R. Kirkwood, Hamilton.

Best fat cow or heifer, John Mitcheltree, Westminster, \$30; 2nd do, John Wilson, Toronto Tp., \$20.

Best yoke of working oxen, W. W. Nelles, Norwich, \$20; 2nd do, N. A. Briscoe, Ernestown, \$12; 3rd do, Chris. Bush, Ernestown, \$8.

Best yoke 3 years old steers, R. Spooner, Kingston, \$16; 2nd do, Hiram Spooner, Storrington, \$10.

Best team of oxen, not less than ten yoke from one township, the property of any number of persons, James Gibson, Kingston, \$40.

SHEEP, LONG WOOLLED.

CLASS XIII.—LEICESTERS.—(111 Entries.)

Judges.—John Foott, Belleville; John Culis, Cobourg; Alexander Jeffrey, Whitby; R. A. Hartley, Chinguacousy; J. Salkeld, Stratford; and James Craig, Belmont.

Best ram, two shears and over, Jno. Miller, Pickering, \$16; 2nd do, George Miller, \$10; 3rd do, John Snell, Chinguacousy, \$5.

Best shearling ram, John Snell, Chinguacousy, \$16; 2nd do, P. R. Wright, Cobourg, \$10; 3rd do, George Miller, Markham, \$5.

Best ram lamb, George Jackson, Gore of Toronto, \$8; 2nd do, P. R. Wright, Cobourg, \$4; 3rd do, N. Bethell, Grantham, \$2.

Best two ewes, two shears and over, Geo. Miller, Markham, \$16; 2nd do, John Snell, Chinguacousy, \$11; 3rd do, John Miller, Pickering, \$6.

Best two shearling ewes, John Snell, Chinguacousy, \$12; 2nd do, George Miller, Markham, \$8; 3rd do, John Miller, Pickering, \$4.

Best two ewe lambs, George Jackson, Gore of Toronto, \$6; 2nd do, do, do, \$4; 3rd do, John Miller, Pickering, \$2.

REMARK.—Your Judges would recommend that aged ewes should not be allowed to compete unless they have had lambs that season.

CLASS XIV.—COTSWOLDS.—(54 Entries.)

Judges.—M. Joness, Bowmanville; W. Whitelaw, Guelph; John Carter, Markham; and Joseph Kirby, Esquering.

Best ram, two shears and over, George Miller, Markham, \$16; 2nd do, John Snell, Chinguacousy, \$10; 3rd do, F. W. Stone, Guelph, \$5.

Best shearling ram, Walker Unwin, St. Mary's; imported from England in 1863, \$48; 2nd do, F. W. Stone, Guelph, \$10; 3rd do, George Miller Markham, \$5.

Best ram lamb, John Snell, Chinguacousy, \$8; 2nd do, do, do, \$4; 3rd do, George Miller, Markham, \$2.

Best two ewes, two shears and over, Geo. Miller, Markham, \$16; 2nd do, F. W. Stone, Guelph, \$11; 3rd do, do, do, \$6.

Best two shearling ewes, John Snell, Chinguacousy, \$12; 2nd do, F. W. Stone, Guelph, \$8; 3rd do, George Miller, Markham, \$4.

Best two ewe lambs, John Snell, Chinguacousy, \$6; 2nd do, do, do, \$4; 3rd do, George Miller, Markham, \$2.

REMARK BY JUDGES.—The exhibition of Cotswold sheep has been very limited in extent, but the quality is as good as usual.

CLASS XV.—OTHER LONG WOOLLED SHEEP,
NOT LEICESTERS OR COTSWOLDS.

(92 Entries.)

Judges.—D. Hooper, Newburgh; W. Elliott, Iroquois; and G. Sproatt, jun., Harpurhey.

Best ram, two shears and over, Simon Beattie, Markham, \$16; 2nd do, Henry Jennings, Markham, \$10; 3rd do, John Snell, Chinguacousy, \$5.

Best shearling ram, John Snell, Chinguacousy, \$16; 2nd do, Geo. Miller, Markham, \$10; 3rd do, John Snell, Chinguacousy, \$5.

Best ram lamb, George Jackson, Gore of Toronto, \$8; 2nd do, do, do, \$4; 3rd do, George Miller, Markham, \$2.

Best two ewes, two shears and over, John Snell, Chinguacousy, \$16; 2nd do, John Miller, Pickering, \$11; 3rd do, George Miller, Markham, \$6.

Best two shearling ewes, Alfred Jeffrey, Vaughan, \$12; 2nd do, Geo. Miller, Markham, \$8; 3rd do, John Miller, Pickering, \$4.

Best two ewe lambs, John Snell, Chinguacousy, \$6; 2nd do, George Miller, Markham, \$4; 3rd do, J. Miller, Pickering, \$2.

SHEEP, MEDIUM WOOLLED.

CLASS XVI.—SOUTH DOWNS—(48 Entries.)

Judges.—D. Perley, Brantford; N. Choate, Port Hope; and Ed. Jones, Thorold.

Best ram, two shears and over, F. W. Stone, Guelph, \$16; 2nd do, James Vine, St. Catharines, \$10; 3rd do, F. W. Stone, Guelph, \$5.

Best shearling ram, F. W. Stone, Guelph, \$16; 2nd do, N. Bethell, Grantham, \$10; 3rd do, do, do, \$5.

Best ram lamb, H. Spencer, Whitby, \$8; 2nd do, F. W. Stone, Guelph, \$4; 3rd do, do, do, \$2.

Best two ewes, two shears and over, Jas. Vine, St. Catharines, \$16; 2nd do, F. W. Stone, Guelph, \$11; 3rd do, N. Bethell, Grantham, \$6.

Best two shearling ewes, F. W. Stone, Guelph, \$12; 2nd do, N. Bethell, Grantham, \$8; 3rd do, F. W. Stone, Guelph, \$4.

Best two ewe lambs, N. Bethell, Grantham, \$6; 2nd do, F. W. Stone, Guelph, \$4; 3rd do, P. R. Davy, Ernestown, \$2.

CLASS XVII.—CHEVIOTS—(26 Entries.)

Judges.—T. Allen, Whitby; J. B. Aylsworth, Newburgh; and D. Milligan, Port Hope.

Best ram, two shears and over, Thomas Guy, Oshawa, \$16; 2nd do, David Elliott, Grafton, \$10; 3rd do, George Miller, Markham, \$5.

Best shearling ram, D. Elliott, Grafton, \$16; 2nd do, Thos. Guy, Oshawa, \$10.

Best ram lamb, D. Elliott, Grafton, \$8; 2nd do, George Miller, Markham, \$4; 3rd do, Thos. Guy, Oshawa, \$2.

Best two ewes, two shears and over, Geo. Miller, Markham, \$16; 2nd do, Thos. Guy, Oshawa, \$11; 3rd do, D. Elliott, Grafton, \$6.

Best two shearling ewes, George Miller, Markham, \$12; 2nd do, D. Elliott, Grafton, \$8; 3rd do, do, do, \$4.

Best two ewe lambs, G. Miller, Markham, \$6; 2nd do, D. Elliott, Grafton, \$4; 3rd do, do, do, \$2.

CLASS XVIII.—OTHER MEDIUM WOOLLED
SHEEP, NOT SOUTH DOWNS OR CHEVIOTS—

(49 Entries.)

Judges.—The same as for class xvii.

Best ram 2 shears and over, H. Spencer, Whitby, \$16; 2nd do, Geo. Miller, Markham, \$10; 3rd do, H. Spencer, Whitby, \$5.

Best shearling ram, H. Spencer, Whitby, \$16; 2nd do, Geo. Miller, Markham, \$10; 3rd do, H. Spencer, Whitby, \$5.

Best ram lamb, G. Miller, Markham, \$8; 2nd do, H. Spencer, Whitby, \$4; 3rd do, George Miller, Markham, \$2.

Best 2 ewes two shears and over, George Miller, Markham, \$16; 2nd do, H. Spencer, Whitby, \$11; 3rd do, George Miller, Markham, \$6.

Best 2 shearling ewes, G. Miller, Markham, \$12.

Best 2 ewe lambs, Geo. Miller, Markham, \$6; 2nd do, do, do, \$4.

SHEEP—FINE WOOLLED.

CLASS XIX.—MERINOS AND SAXONS—(44 Entries.)

Judges.—A. Wilson, Maitland; T. Gowland, Seneca; and C. B. Jennings, Niagara Co., N. Y.

Best ram, 2 shears and over, A. Young, Ryckman's Corners, \$16; 2nd do, Jacob Rymal, Ryckman's Corners, \$10; 3rd do, E. Arkland, Oshawa, \$5.

Best shearling ram, Alex. Young, Ryckman's Corners, \$16; 2nd do, E. Arkland,

Oshawa, \$10; 3rd do, Jacob Rymal, Ryckman's Corners, \$5.

Best ram lamb, E. Arkland, Oshawa, \$8; 2nd do, A. Young, Ryckman's Corners, \$4; 3rd do, Jacob Rymal, Ryckman's Corners, \$2.

Best 2 ewes, 2 shears and over, E. Arkland, Oshawa, \$16; 2nd do, Jacob Rymal, Ryckman's Corners, \$11; 3rd do, A. Young, Ryckman's Corners, \$6.

Best 2 shearling ewes, J. Rymal, Ryckman's Corners, \$12; 2nd do, A. Young, Ryckman's Corners, \$8.

Best 2 ewe lambs, E. Arkland, Oshawa, \$6; 2nd do, A. Young, Ryckman's Corners, \$4; 3rd do, J. Rymal, Ryckman's Corners, \$2.

CLASS XX.—OTHER FINE WOOLED SHEEP, NOT MERINOS OR SAXONS—(18 Entries).

Judges—The same as for class xix.

Best ram, 2 shears and over, J. H. Peck, Ameliasburg, (Silesian), imported from United States 1863, \$32.

Best two ewes, two shears and over, J. H. Peck, Ameliasburg, (Silesian), imported from U. S. 1863, \$24.

Best two shearling ewes, J. H. Peck, Ameliasburg, (Silesian), imported from U. S. 1863, \$18.

Best two ewe lambs, J. H. Peck, Ameliasburg, (Silesian), imported from U. S. 1863, \$9.

CLASS XXI.—FAT SHEEP AND EXTRAS—(36 Entries).

Judges.—Philip Armstrong, Toronto; R. Best, Niagara; H. Andrews, Kingston; and R. Kirkwood, Hamilton.

Best two fat wethers, John Wilson, Toronto Tp., \$12.

Best two fat ewes, F. W. Stone, Guelph, \$12; 2nd do, George Jackson, Gore of Toronto, \$8; 3rd do, Alfred Jeffrey, Vaughan, \$4.

EXTRA ENTRIES IN SHEEP.—One ram, two shears and over, three shearling rams, four ram lambs, six ewes, eight shearling ewes, and eight ewe lambs, all exhibited by George Jackson, Gore of Toronto, cross-bred, one prize recommended for the lot, \$16.

PIGS—LARGE BREEDS.

CLASS XXII.—YORKSHIRES—(24 Entries).

Judges—H. D. Smith, Aldborough; James Miller, Spencerville; and Henry Ketcheson, North Hastings.

Best boar, 1 year and over, C. A. Jordison, Sidney, \$15; 2nd do, J. P. Wheler, Scarboro, \$10.

Best Boar, under one year, James Logan, Hochelaga, C. E., \$10; 2nd do, James Main, Trafalgar, \$6; 3rd do, C. A. Jordison, Sidney, \$4.

Best breeding sow, 1 year and over, J. P. Wheler, Scarboro, \$10; 2nd do, James Logan, Hochelaga, C. E., \$7; 3rd do, do, do, \$4.

Best sow, under 1 year old, James Logan, Hochelaga, C. E., \$5; 2nd do, C. A. Jordison, Sidney, \$4; 3rd do, James Logan, Hochelaga, \$3.

CLASS XXIII.—LARGE BERKSHIRES—(10 Entries).

Judges—The same as for class XXII.

Best boar, one year and over, Peter Sewell, Kingston, \$15; 2nd do, G. K. Morton, Morton, \$10.

Best boar, under one year, A. McMillan, Kingston, \$10; 2nd do, do, do, \$6; 3rd do, G. K. Morton, Morton, \$4.

Best breeding sow, one year and over, James Main, Trafalgar, \$10; 2nd do, G. K. Morton, Morton, \$6.

Best sow, under one year old, A. McMillan, Kingston, \$5; 2nd do, G. K. Morton, Morton, \$4.

CLASS XXIV.—ALL OTHER LARGE BREEDS.—(38 Entries).

Judges.—The same as for class XXII.

Best boar, one year and over, T. T. Cavanagh, Jefferson Co., N.Y., \$15; 2nd do, A. C. Clark, Jefferson Co., N.Y., \$10; 3rd do, J. R. Denner, Bath, \$6.

Best boar, under one year, T. T. Cavanagh, Jefferson Co., N.Y., \$10; 2nd do, do, do, \$6; 3rd do, do, do, \$4.

Best breeding sow, one year and over, George Miller, Markham, \$10; 2nd do, J. P. Wheler, Scarboro, \$7; 3rd do, T. T. Cavanagh, Jefferson Co., N. Y., \$4.

Best sow, under one year old, A. C. Clark, Jefferson Co., N.Y., \$5; 2nd do, do, do, \$4; 3rd do, do, do, \$3.

PIGS—SMALL BREEDS.

CLASS XXV.—SUFFOLKS—(14 Entries).

Judges.—T. Macdonell, Williamstown; T. McEvers, Cobourg; and A. McLaren, S. Hastings.

Best boar, one year and over, Jas. Main, Trafalgar, \$15.

Best boar, under one year, James Main Trafalgar, \$10; 2nd do, Henry Knight, Kingston, \$6.

Best breeding sow, one year and over, Jas. Logan, Hochelaga, C.E., \$10; 2nd do, J.P. Litchfield, Portsmouth, \$7; 3rd do, John Geale, Kingston, \$4.

Best sow, under one year old, Jas. Main, Trafalgar, \$5; 2nd do, John Geale, Kingston, \$4.

CLASS XXVI.—IMPROVED BERKSHIRES.—
(22 Entries.)

Judges.—The same as for Class xxv.

Best boar, one year and over, W. Eagleson, Hamilton Tp., \$15; 2nd do, E. W. Thomson, York Tp., \$10; 3rd do, W. Gibbard, Richmond, \$6.

Best boar under one year, G. K. Morton, Morton, \$10; 2nd do, do, do, \$6; 3rd do, E. W. Thomson, York Tp., \$4.

Best breeding sow one year and over, G. K. Morton, Morton, \$10; 2nd do, W. L. Latimer, Storrington, \$7; 3rd do, G. K. Morton, Morton, \$4.

Best sow under one year old, W. H. Rankin, Glenburnie, \$5; 2nd, G. K. Morton, Morton, \$4; 3rd do, do, do, \$3.

CLASS XXVII.—ALL OTHER SMALL BREEDS.
(23 Entries.)

Judges.—The same as in Class xxv.

Best boar one year and over, Jas. Main, Trafalgar, \$15; 2nd do, W. L. Latimer, Storrington, \$10.

Best boar under one year, James Main, Trafalgar, \$10; 2nd do, W. Murray, Kingston, \$6; 3rd do, E. Howard, Fredericksburg, \$4.

Best breeding sow one year and over, John Flanigan, Kingston, \$10; 2nd do, A. C. Clark, Jefferson Co., N.Y., \$7.

Best sow under one year old, Jas. Main, Trafalgar, \$5; 2nd do, Wm. Murray, Kingston, \$4; 3rd do, J. F. Grant, Portsmouth, \$3.

POULTRY, &c.

CLASS XXVIII.—POULTRY, &c.—
(192 Entries.)

Judges.—R. Young, Almonte; James Vine, Niagara; and William Humphries, Warkworth.

Best pair white dorkings, John Bogue, London, \$4; 2nd do, do, do, \$2.

Best pair of spangled do, James Logan, Hochelaga, C.E., \$4; 2nd do, R. Harding, Kingston, \$2.

Best pair of black Polands, Robert Currie, Grantham, \$4; 2nd do, James McGrath, Montreal, \$2.

Best pair of white Polands, Robert Currie, Grantham, \$4; 2nd do, Jas. McGrath, Montreal, \$3.

Best pair of golden Polands, John Bogue, London, \$4; 2nd do, Wm. Bell, Kingston, \$2.

Best pair of silver Polands, Robt. Currie, Grantham, \$4; 2nd do, John Bogue, London, \$2.

Best pair of game fowls, John Bogue, London, \$4; 2nd do, Robert Currie, Grantham \$2.

Best pair of Jersey blues, P. Sewell, Kingston, \$4; 2nd do, John Bogue, London, \$2.

Best pair Cochin China, Shanghai, Canton, or Bramah Pootra fowls, James Logan, Hochelaga, \$4; 2nd do, A. R. Briggs, Kingston, \$2.

Best pair of black Spanish fowl, James Logan, Hochelaga, \$4; 2nd do, W. Bell, Kingston, \$2.

Best pair of Bolton bays, John Bogue, London, \$4.

Best pair of Bolton greys, do, do, \$4; 2nd do, do, do, \$2.

Best pair of Hamburg fowls, W. O. M. King, London, \$4; 2nd do, John Bogue, London, \$2.

Best pair of feather-legged bantams, John Bogue, London, \$2; 2nd do, John Jackson, Newburgh, \$1.

Best pair of smooth-legged bantams, Robt. Currie, Grantham, \$2; 2nd do, J. P. Litchfield, Portsmouth, \$1.

Best pair of turkeys [white] John Bogue, London, \$4; 2nd do, James Durand, Kingston, \$2.

Best pair of turkeys, [colored] John Bogue, London, \$4; 2nd do James Durand, Kingston, \$2.

Best pair of wild turkeys, John Bogue, London, \$4.

Best pair of large geese, John Cullis, Hamilton Tp., \$4; 2nd do, J Bogue, London, \$2.

Best pair of Bremen geese, John Bogue, London, \$4; 2nd do, do, do, \$2.

Best pair of Chinese geese, Thomas Anderson, Fredericksburg, \$4; 2nd do, do, do, \$2.

Best pair of Muscovy ducks, Robert Currie, Grantham, \$4; 2nd do, do, do, \$2.

Best pair of common ducks, John Bogue, London, \$4; 2nd do, do, do, \$2.

Best pair of Aylesbury ducks, Jno. Bogue, London, \$4; 2nd do, Robert Currie, Grantham, \$2.

Best pair of Poland ducks, John Asselstine, Ernestown, \$4; 2nd do, John Bogue, London, \$2.

Best pair of Rouen ducks, T. Anderson, North Fredericksburg, \$4; 2nd do, John Bogue, London, \$2.

Best pair of Guinea fowls, Wm. Lawrence, Loughboro, \$4; 2nd do, J. McConnell, Kingston, \$2.

Best pair of pea fowls, J. P. Litchfield, Portsmouth, \$4; 2nd do, W. D. P. W. Day, Kingston, \$2.

Best collection of pigeons, W. Bell, Kingston, \$4; 2nd do, J. P. Litchfield, Portsmouth, \$2.

Best lot of poultry in one pen, and owned by the exhibitor, John Bogue, London, \$6.

Best collection of poultry entered in the various classes by one exhibitor, John Bogue, London, \$8.

Best pair of rabbits, A. P. Briggs, Kingston, \$2.

Best lot of rabbits, A. P. Briggs, Kingston, \$4.

EXTRA PRIZES.—Pair of golden pheasant fowls, John Bogue, London, \$2. Pair of ruffled or French fowls, W. D. P. W. Day, Kingston, \$2.

AGRICULTURAL PRODUCTIONS.

CLASS XXIX.—GRAINS, SEEDS, &C—(500 Entries).

Judges.—E. A. McNaughton, Port Hope; G. Wheler, Uxbridge; A. Wilmott, Trafalgar; C. Chapin, Oakland; Levi Lewis, Saltfleet; and D. Anderson, Tyendinaga.

The Canada Company's prize for the best 25 bushels of fall wheat, the produce of Canada West, being the growth of the year 1863. Each sample to be of one distinct variety, pure and unmixed, of the best quality for seed, and not to be tested merely by weight. The prize awarded to the actual grower only of the wheat, which is given up to and becomes the property of the Association, for distribution to the County Societies for seed, David Lockwood, Sidney, \$100; 2nd do, by the Association, Trueman McEvers, Hamilton Tp., \$40; 3rd do, S. J. J. Brown, Niagara, \$20.

Best two bushels of white winter wheat, W. Thompson, E. Whitby, \$10; 2nd do, Thomas Cullis, Hamilton Tp., \$8; 3rd do, W. S. Guess, Loughboro, \$6; 4th do, Isaac Preston, Manvers, \$4.

Best two bushels red winter wheat, S. J. J. Brown, Niagara Tp., \$10; 2nd do, H. J. Brown, Niagara Tp., \$8; 3rd do, D. Lockwood, Belleville, \$6; 4th do, R. C. Gorssline, Tyendinaga, \$4.

Best two bushels of white spring wheat, John Cullis, Hamilton, \$10; 2nd do, Chas. Grass, Kingston, \$8; 3rd do, Isaac Preston, Manvers, \$6; 4th do, O. T. Pruyn, Fredericksburg, \$4.

Best two bushels red spring wheat, John Cullis, Hamilton Tp., \$10; 2nd do, Trueman McEvers, Hamilton Tp., \$8; 3rd do, W. Eagleson, Hamilton Tp., \$6; 4th do, Wm. Lawrence, Loughboro, \$4.

Best two bushels of barley, two-rowed, Jas. Logan Hochelaga, C. E., \$6; 2nd do, John Pratt, Cobourg, \$4; 3rd do, William Peck, Ameliasburg, \$2; 4th do, R. Spooner, Kingston, Vol. Trans.

Best two bushels of barley, six-rowed, Allan Bond, Storrington, \$6; 2nd do, Daniel Campbell, Charlottenburg, \$4; 3rd do, R. Collins, Camden, \$2; 4th do, Henry Jennings, Markham, Trans.

Best two bushels of rye O. T. Pruyn, Fredericksburg, \$6; 2nd do, R. Spooner, Kingston, \$4; 3rd do, W. Lawrence, Loughboro, \$2; 4th do, J. Pearson, Hillier, Trans.

Best two bushels of oats, white, Daniel Campbell, Charlottenburg, \$6; 2nd do, W. S. Guess, Loughboro, \$4; 3rd do, George Jack, Pittsburgh, \$2; 4th do, J. H. Peck, Albany, Trans.

Best two bushels of oats, black, L. F. Fralick, Ernestown, \$6; 2nd do, Henry Knight, Kingston Tp., \$4; 3rd do, James Durand, Kingston, \$2; 4th do, Wm. Peck, Ameliasburg, Trans.

Best two bushels of field peas, Charles Grass, Kingston, \$6; 2d do, A. McMillan, Kingston, \$4; 3rd do, M. Wellborn, do, \$2; 4th do, Miles Storm, Camden, Trans.

Best two bushels of marrowfat peas, Henry Jennings, Markham, \$6; 2nd do, Chas. Grass, Kingston, \$4; 3rd do, A. Bond, Storrington, \$2; 4th do, Jas. Pierson, Hillier, Trans.

Best two bushels of tares, George Gordanier, Ernestown, \$6; 2nd do, Joseph Davidson, Kingston, \$4; 3rd do, James Logan, Montreal, \$2; 5th do, W. Gibbard, Richmond, Trans.

Best bushel of white field beans, Jno. Bowland, Ramsay, \$6; 2d do, G. J. Smith, Fredericksburg, \$4; 3rd do, William Faris,

Sorel, \$2; 4th do, T. Anderson, N. Fredericksburg, Trans.

Best two bushels Indian corn, in the ear, (white) H. J. Brown, Niagara, \$6; 2nd do, S. J. J. Brown, Niagara, \$4; 3rd do, G. J. Miller, Virgil, \$2; 4th do, G. J. Smith, Fredericksburg, Trans.

Best two bushels, do, (yellow) H. J. Brown, Niagara, \$6; 2nd do, S. J. J. Brown, Niagara, \$4; 3rd do, G. J. Miller, Virgil, \$2; 4th do, Chris. Bush, Ernestown, Trans.

Best bushel of timothy seed, Henry Knight, Kingston, \$6; 2nd do, P. Hinman, Haldimand, \$4; 3rd do, Wm. Lake, Storrington, \$2; 4th do, A. Bond, do, Trans.

Best bushel clover seed, John Parks, Napanee, \$6; 2nd do, George Ham, Fredericksburg, \$4; 3rd do, Thomas Allan, Whitby, \$2.

Best bushel of Alsike clover seed, Thos. Stock, Waterdown, \$6; 2d do, P. R. Wright, Cobourg, \$4.

Best bushel of hemp seed, J. B. Aylesworth, Newburgh, 2nd prize, \$4.

Best bushel of flax-seed, A. Bond, Storrington, \$6; 2nd do, J. W. Bristol, South Fredericksburg, \$4; 3rd do, P. McFadden, Hallowell, \$2.

Best bushel of mustard seed, R. C. Gill, Colborne, 2nd prize, \$4.

Best Swedish turnip seed, from transplanted bulbs, not less than 20 pounds, R. C. Gill, Colborne, \$6; 2nd do, John Bowland, Ramsay, \$4.

Best 14 lbs white Belgian field carrot seed, R. C. Gill, Colborne, \$6; 2nd do, Jas. Logan, Montreal, \$4; 3rd do, Jas. H. Peck, Ameliasburgh, \$2.

Best 12 lbs long red mangel wurzel seed, R. C. Gill, Colborne, \$6; 2nd do, John Pratt, Cobourg, \$4; 3rd do, James Logan, Montreal, \$2.

Best 12 lbs yellow globe mangel wurzel seed, R. C. Gill, Colborne, \$6; 2nd do, John Pratt, Cobourg, \$4; 3rd do, James Logan, Montreal, \$2.

Best bale of hops, not less than 112 lbs, Henry Dunning, Sophiasburg, \$20; 2nd do, W. H. Cotter, Northport, \$12.

Best bushel of horse or tick beans, Jas. Logan, Montreal, \$6.

Best bushel of buckwheat, Dan. Campbell, Charlottenburg, \$4; 2nd do, Wm. Peck, Ameliasburg, \$2; 3rd do, Reuben Spooner, Kingston, Trans.

Best bushel of millet, Wm. Peck, Ameliasburgh, \$4; 2nd do, E. W. Thomson, York Tp., \$2.

Best bushel of Hungarian grass seed, Henry Cunningham, Ameliasburgh, \$4.

REMARKS.—The Judges appointed upon class 29, grains and seeds, after having gone through the various sections and awarded the prizes according as we found the articles worthy, have had occasion to re-consider our decision in section 2, on account of the entry No. 4, which was awarded the first prize. Upon turning out the bag we found that the wheat at the bottom was very different to that at the top, being very much cut up and inferior in quality. We turned out all the other lots and found them uniform, we have therefore deemed it for the benefit of the Association to throw out number 4 from competition, and awarded the prizes as now found in our corrected Book. We would further remark that we found in many of the classes a great deficiency in competition, in some of which we did not award a first-prize. In the extra class there were none found which we considered worthy of commendation.

CLASS XXX.—ROOTS AND OTHER FIELD CROPS.—(288 Entries.)

Judges.—Mattaniah Kerr, Hungerford; Thomas L. Heacock, Aurora; John A. Donaldson, Weston; E. C. Fisher, Etobicoke.

Best bushel of cup potatoes, R. Spooner, Kingston, \$3; 2nd do, Willet Ferris, Gananoque, \$2.

Best bushel of garnet Chilis, John Pratt, Cobourg, \$3; 2nd do, G. K. Morton, Morton, \$2; 3rd do, R. Guthrey, Toronto, \$1.

Best bushel of white potatoes, J. M. Grover, Toronto, \$3; 2nd do, R. Spooner, Kingston, \$2; 3rd do, W. Ferris, Gananoque, Trans.

Best bushel of red do, J. B. Aylsworth Newburgh, \$3; 2nd do, T. McEvers, Hamilton, \$2; 3rd do, Timothy Donovan, Kingston, Trans.

Best bushel blue do, George Croft, Portsmouth, \$3; 2nd do, R. Spooner, Kingston, \$2; 3rd do, R. Guthrey, Toronto, Trans.

Best bushel of any other sort, George Taylor, Belleville, \$3; 2nd do, R. Guthrey, Toronto, \$2; 3rd do, G. F. Jackson, Kingston, Trans.

Best collection of field potatoes, one peck of each sort named, R. Guthrey, Toronto, \$4; 2nd do, R. Spooner, Kingston, \$3; 3rd do, B. Losee, Cobourg, \$2.

Best bushel of Swede turnips, George Taylor, Belleville, \$3; 2nd do, John Pratt,

Cobourg, \$2; 3rd do, E. W. Thomson, York Tp., \$1.

Best bushel of white globe turnips, R. Spooner, Kingston, \$3; 2nd do, J. Williamson, do, \$2; 3rd do, G. Taylor, Belleville, Trans.

Best 20 roots red carrots, John F. Grant, Kingston, \$3; 2nd do, R. Guthrey, Toronto, \$2; 3rd do, G. J. Miller, Virgil, \$1.

Best 20 roots white or Belgian carrots, John Pratt, Cobourg, \$3; 2nd do, James Logan, Montreal, \$2; 3rd do, Jas. Durand, Kingston, \$1.

Best 12 roots mangel wurzel, (long red) G. J. Smith, N. Fredericksburg, \$3; 2nd do, John Harker, Kingston, \$2; 3rd do, Allan Bond, Storrington, \$1.

Best 12 roots red globe mangel wurzel, Joseph Hitchcock, Portsmouth, \$3; 2nd do, James Williamson, Kingston, \$2.

Best 12 yellow globe mangel wurzel, Jas. Logan, Montreal, \$3; 2nd do, John Pratt, Cobourg, \$2; 3rd do, Joseph Hitchcock, Portsmouth, \$1.

Best 12 roots long yellow mangel wurzel, R. C. Gill, Colborne, \$3.

Best 12 roots of khol rabi, James Logan, Montreal, \$3; 2nd do, R. Guthrey, Toronto, \$2; 3rd do, George Croft, Portsmouth, \$1.

Best 12 roots of sugar beet, G. J. Smith, Fredericksburg, \$3; 2nd do, John Pratt, Cobourg, \$2; 3rd do, James Williamson, Kingston, \$1.

Best 20 roots parsnips, R. Guthrey, Toronto, \$3; 2nd do, R. C. Gill, Colborne, \$2; 3rd do, Geo. Croft, Portsmouth, Trans.

Best 20 roots of chicory, G. J. Miller, Virgil, \$2; 2nd do, R. Guthrey, Toronto, \$2; 3rd do, R. C. Gill, Colborne, Trans.

Best 2 large squashes for cattle, R. L. Denison, Toronto, \$3; 2nd do, G. J. Smith, Fredericksburg, \$2; 3rd do, P. M. Clark, Ernestown, \$1.

Best 4 common yellow field pumpkins, T. Stock, Watertown, \$3; 2nd do, R. Spooner, Kingston, \$2; 3rd do, N. A. Briscoe, Ernestown, Trans.

Best 20 lbs of tobacco leaf, growth of Canada West, R. Guthrey, Toronto, \$3; 2nd do, G. J. Miller, Virgil, \$2; 3rd do, R. C. Gill, Colborne, Trans.

Best broom corn brush, 28 lbs., Wm. Peck, Ameliasburgh, \$3; 2nd do, R. L. Clark, Ernestown, \$2; 3rd do, John Harker, Kingston, Trans.

The Canada Company's Prize for Flax.

Best 112 lbs. of flax, scutched, C. Mitchell,

Norval, \$24; 2nd do, by the Association, Daniel Campbell, Charlottenburg, \$16; 3rd do, James Logan, Montreal, \$8.

The Canada Company's Prize for Hemp.

Best 112 lbs of Hemp, Wm. Boa, St. Laurent, C. E., \$16; 2nd do, by the Association, C. Mitchell, Norval, \$12.

EXTRA ENTRIES.—Tobacco on the stalk, W. D. P. W. Day, Kingston, commended; do, in leaf, W. Ferguson, Kingston, commended; sample dew rotted flax in the straw, Samuel Anderson, Marysburgh, commended.

REMARK BY JUDGES.—A lot of very fine potatoes of various kinds, and a sample of very fine wheat were shown by Mr. Roach, Agent for the Canadian Land and Emigration Company, raised in the township of Dysart, in the northern part of the county of Peterboro.

HORTICULTURAL PRODUCTS.

CLASS XXXI.—FRUIT—(184 Entries).

Nurseryman and Market Gardeners' List. Canada only. Competitors receive a premium only in one section of each fruit.

Judges.—J. C. Small, Toronto; G. Laing, Hamilton; and James Gay, Hamilton.

Best 30 varieties of apples, correctly named, six of each, D. W. Beadle, St. Catharines, \$8.

Best 20 varieties of pears, correctly named, three of each, D. W. Beadle, St. Catharines, \$8; 2nd do, J. P. Williams, Bloomfield, \$6.

Best 10 varieties plums, correctly named, six of each, Jas. Wadsworth, Kingston, \$5.

Best display of fruit, the growth of exhibitor, distinct from other entries, three specimens of each sort, D. W. Beadle, St. Catharines, \$8.

Farmer and Amateurs' List. Canada only. Nurserymen and Market Gardeners excluded. Competitors receive a premium only in one section of each fruit.

Best 20 varieties apples, correctly named, six of each, H. J. Brown, Niagara, \$6; 2nd do, R. B. Werden, Pieton, \$4; 3rd do, S. J. J. Brown, Niagara, \$2.

Best 10 varieties apples, correctly named, six of each, J. M. Hirschfelder, Toronto, \$4; 2nd do, J. M. Grover, Colborne, \$3; 3rd do, F. Currie, Niagara, \$2.

Best 4 varieties dessert apples, correctly named, six of each, Thomas Briggs, Kingston, \$3; 2nd do, J. D. Humphreys, Toronto, \$2; 3rd do, F. Currie, Niagara, Trans.

Best 4 varieties cooking apples, correctly named, six of each, F. Currie, Niagara, \$3; 2nd do, Thos. Briggs, Kingston, \$2; 3rd do, R. Guthrey, Toronto, Vol. Trans.

Best 8 varieties pears, correctly named, three of each, R. Currie, Grantham, \$5; 2nd do, J. D. Humphreys, Toronto, \$3; 3rd do, R. B. Werden, Picton, \$2.

Best 4 varieties pears, correctly named, three of each, F. Currie, Niagara, \$5; 2nd do, H. J. Brown, Niagara, \$3; 3rd do, do, do, Vol. Trans.

Best 12 pears, of one variety, S. J. J. Brown, Niagara, \$3; 2nd do, do, do, \$2; 3rd do, do, do, Vol. Trans.

Best collection plums, correctly named, six of each, R. B. Werden, Picton, \$4.

Best 12 plums, one variety, correctly named, J. D. Humphreys, Toronto, \$2; 2nd do, Thos. Wilson, Kingston, \$1; 3rd do, do, do, Vol. Trans.

Best six varieties of peaches, correctly named, grown in open air, six of each, G. J. Miller, Virgil, \$4; 2nd do, H. J. Brown, Niagara, \$3.

Best 12 peaches, one variety, correctly named, grown in open air, F. Currie, Niagara, \$2; 2nd do, S. J. J. Brown, Niagara, \$1.

Best collection grapes, grown in open air, John C. Kilborn, Beamsville, \$6; 2nd do, George Curry, Grantham, \$4; 3rd do, Isaac N. Rose, Morrisburg, \$2.

Best 3 bunches grapes, one variety, named, Geo. M. Wilkinson, Kingston, \$3; 2nd do, A. T. Drummond, Kingston, \$2; 3rd do, Thos. Briggs, Kingston, Vol. Trans.

General List of Fruits, Canada, open to all.

Best twelve quinces, F. Currie, Niagara, \$2; 2nd do, H. J. Brown, Niagara, \$1.

Best collection of grapes, grown under glass, one bunch each, correctly named, Robt. Curry, Brockville, \$6; 2nd do, J. M. Hirschfelder, Toronto, \$4.

Best two bunches black grapes, grown under glass, correctly named, Robert Curry, Brockville, \$4; 2nd do, J. M. Hirschfelder, Toronto, \$3; 3rd do, J. Fleming, Toronto, \$2.

Best two bunches white grapes, grown under glass, correctly named, Robert Curry, Brockville, \$4; 2nd do, J. Fleming, Toronto, \$3.

Best green fresh melon, James King, York Tp., \$2; 1st do, Thomas Briggs, Kingston, \$1.

Best red or scarlet fresh melons, T. Briggs,

Kingston, \$2; 2nd do, J. C. Small, Toronto, \$1.

Best water melon, James King, Toronto, \$2; 2nd do, R. Guthrey, Toronto, \$1.

Domestic Pure Wines.

Best Isabella wine, J. C. Kilborn, Beamsville, Diploma.

Best native Canadian grape wine, J. C. Kilborn, Beamsville, Diploma.

Best grape wine from any other sort, R. Sinclair, Cobourg, Diploma.

Best currant wine, J. C. Kilborn, Beamsville, Diploma.

Foreign Class.

Best collection of apples, Ellwanger & Barry, Rochester, \$5.

Best collection of pears, Ellwanger & Barry, Rochester, \$5.

Best collection of plums, G. W. Lawrence, Oswego, \$5.

Best collection of open air grapes, Ellwanger & Barry, Rochester, N. Y., \$5.

Best collection of valuable pears, grown by any person not a professional Nurseryman, in any part of Upper Canada east of the county of York, six specimens each variety, named, with statement of locality, soil, treatment, and results of cultivation, DR. BEADLE'S PRIZE, Thirty-five Pear Trees, suitable for planting, awarded to R. B. Werden, Picton, county of Prince Edward.

EXTRA PRIZES.—Imperial crab apples, James Durand, Kingston, 50c; Siberian crab apples, M. Wellborn, Kingston, 50c; P. M. Clark, Ernestown, curious variety of apple, 50c; basket of assorted fruit, Thos. Wilson, Kingston, \$2; red Siberian crab apples, William Peek, Albury, 50c; gooseberries, Robert Curry, Brockville, 50c; dish of crab apples, J. M. Hirschfelder, Toronto, 50c; Missouri plums, Thomas Wilson, Kingston, 50c; winter apples, 1 doz, James Wadsworth, Kingston, 50c; autumn apples, 1 doz., do, do, 50c; currants, do, do, 50c; black grapes, open air, do, do, \$1; grapes grown under glass, Ellwanger & Curry, Rochester, N.Y., \$6; red currants, Wm. Harker, Kingston, 50c; white currants, do, do, 50c; autumn apples, 1 doz., James Wadsworth, Kingston, 50c; basket of fruit, Robert Curry, Brockville, \$3.

REMARK BY JUDGES.—The display of fruit is exceedingly good in quality, but limited in quantity, as compared with former exhibitions.

CLASS XXXII.—GARDEN VEGETABLES.—
(301 Entries.)

Judges.—A. Kerr, London; R. Cooper, Brockville; and Allan Bogue, London.

Best 12 roots of salsify, Gage J. Miller, Virgil, \$2; 2nd do, James Wadsworth, Kingston, \$1.50; 3rd do, R. C. Gill, Colborne, \$1.

Best 3 heads brocoli, R. Guthrey, Lunatic Asylum, Toronto, \$2; 2nd do, R. C. Gill, Colborne, \$1.50.

Best 3 heads cauliflower, R. Guthrey, Toronto, \$2; 2nd do, James King, York Tp., \$1.50; 3rd do, M. Flanagan, Kingston, \$1.

Best 3 heads cabbage, summer, R. Guthrey, Toronto, \$2; 2nd do, James King, York Tp., \$1.50; 3rd do, James Fleming, Toronto, \$1.

Best 3 heads cabbage, winter, S. N. Watts, Portsmouth, \$2; 2nd do, James King, York Tp., \$1.50; 3rd do, Eli Braidon, Portsmouth, \$1.

Best 4 sorts winter cabbage, including savoy, one of each sort, James King, York Tp., \$3; 2nd do, S. N. Watts, Portsmouth, \$2; 3rd do, R. Guthrey, Toronto, \$1.

Best 3 heads red cabbage, Robert Currie, Grantham, \$2; 2nd do, R. Guthrey, Toronto, \$1.50; 3rd do, James King, York Tp., \$1.

Best 12 carrots, for table, long red, George Berry, Kingston, \$2; 2nd do, R. C. Gill, Colborne, \$1.50; 3rd do, James King, York Tp., \$1.

Best 12 early horn carrots, James King, York Tp., \$2; 2nd do, Thomas Briggs, Kingston, \$1.50; 3rd do, Wm. Faris, Sorel, \$1.

Best 12 table parsnips, Joseph Hitchcock, Portsmouth, \$2; 2nd do, J. M. Grover, Colborne, \$1.50; 3rd do, R. C. Gill, do, \$1.

Best 6 roots of white celery, Robert Curry, Brockville, \$2; 2nd do, M. Flanagan, Kingston, \$1.50; 3rd do, R. Guthrey, Toronto, \$1.

Best 6 roots of red celery, George Berry, Kingston, \$2; 2nd do, G. F. Jackson, Tp of Kingston, \$1.50; 3rd do, R. Guthrey, Toronto, \$1.

Best dozen capsicums, ripe, W. O. M. King, London, \$2; 2nd do, James King, York Tp., \$1.50; 3rd do, R. C. Gill, Colborne, \$1.

Best collection of capsicums, ripe, R. Curry, Brockville, \$3; 2nd do, Charles George, Kingston, \$2; 3rd do, Eli Braidon, Portsmouth, \$1.

Best 3 egg plant fruit, purple, Robt. Currie, Grantham, \$2; 2nd do, Robert Curry, Brockville, \$1.50; 3rd do, Jesse Thayer, Jr, Montreal, \$1.

Best 12 tomatoes, red, C. George, Kingston, \$2; 2nd do, R. Curry, Brockville, \$1.50; 3rd do, G. J. Smith, North Fredericksburg, \$1.

Best 12 tomatoes, yellow, George Berry, Kingston, \$2; 2nd do, J. D. Humphreys, Toronto, \$1.50; 3rd do, Robt. Curry, Brockville, \$1.

Best assorted collection of tomatoes, J. D. Humphreys, Toronto, \$3; 2nd do, Robert Currie, Brockville, \$2; 3rd do, Chas. George, Kingston, \$1.

Best 12 blood beets, long, Robert Currie, Grantham, \$2; 2nd do, G. J. Miller, Virgil, \$1.50; 3rd do, James Durand, Kingston, \$1.

Best peck of white onions, Robert Currie, Grantham, \$2.

Best peck of yellow onions, Robert Currie, Grantham, \$2; 2nd do, James King, York Tp., \$1.50; 3rd do, Wm. Peck, Albury, \$1.

Best peck of red onions, G. J. Miller, Virgil, \$2; 2nd do, Robert Curry, Brockville, \$1.50; 3rd do, Robert Currie, Grantham, \$1.

Best 12 white turnips, table, Wm. Faris, Sorel, \$2; 2nd do, A. H. Campbell, Kingston, \$1.50; 3rd do, J. P. Litchfield, Portsmouth, \$1.

Best 12 yellow turnips, table, Wm. Faris, Sorel, \$2.

Best 12 ears sweet corn, Jesse Thayer, jr., Montreal, \$2; 2nd do, Thomas Briggs, Kingston, \$1.50; 3rd do, Robert Currie, Grantham, \$1.

Best and greatest variety of potatoes, half a peck of each sort, named, R. Guthrey, Toronto, \$2; 2nd do, B. Losee, Cobourg, \$2; 3rd do, R. Spooner, Kingston, \$1.

Best 3 squashes, table, G. F. Jackson, Kingston, \$2; 2nd do, R. C. Gill, Colborne, \$1.50; 3rd do, Jas. Durand, Kingston, \$1.

Best and greatest variety of vegetables, distinct from other entries, each kind named, Jos. Hitchcock, Portsmouth, \$1; 2nd do, S. N. Watts, Portsmouth, \$3; 3rd do, Eli Braidon, Portsmouth, \$2.

EXTRA PRIZES.—12 turnip beets, Chas. George, Kingston, \$1; doz. ears Tuscarora corn, James King, York, 50c; collection of egg plants, Jesse Thayer, jr., Montreal, \$1; varieties of corn, do, do, \$1; varieties of beans, do, do, \$1; pop corn, Mrs. Weinecker, Kingston, 50c.

CLASS XXXIII.—PLANTS AND FLOWERS.—
(133 Entries.)

Judges.—J. C. Small, Toronto; James Gay, Hamilton; George Laing, Hamilton.

Best dozen dahlias, named, W. Faris, Sorel, C. E., \$2; 2nd do, M. Flanagan, Kingston, \$1 50; 3rd do, do, do, \$1.

Best and largest collection of dahlias, W. Faris, Sorel, \$5; 2nd do, M. Flanagan, Kingston, \$4; 3rd do, B. Losee, Cobourg, \$3.

Best bouquet of cut flowers, for table, Jas. Fleming, Toronto, \$2; 2nd do, J. M. Hirschfelder, Toronto, \$1 50; 3rd do, Wm. Faris, Sorel, C. E., \$1.

Best hand bouquet, Wm. Faris, Sorel, C. E., \$2; 2nd do, J. M. Hirschfelder, Toronto, \$1 50; 3rd do, do, do, \$1.

Best collection of green-house plants, not less than 12 specimens, in flower, J. M. Hirschfelder, Toronto, \$10.

Best 12 pansies, M. Flanagan, Kingston, \$2; 2nd do, do, do, \$1 50; 3rd do, R. C. Gill, Colborne, \$1.

Best 6 fuchsias, in flower, Jas. Fleming, Toronto, (second prize), \$3; 2nd do, J. J. Whitehead, (third prize), \$2.

Best collection of annuals in bloom, B. Losee, Cobourg; 2nd do, M. Flanagan, Kingston, \$1 50; 3rd do, G. J. Miller, Virgil, \$1; Commended, R. Guthrey, Toronto.

Best 6 cockscombs, Robt. Curry, Brockville, \$2; 2nd do, F. Currie, Niagara, \$1 50; 3rd do, Jas. Fleming, Toronto, \$1.

Best 6 balsams in bloom, M. Flanagan, Kingston, \$2; 2nd do, R. C. Gill, Colborne, \$1 50; 3rd do, J. Williamson, Kingston, \$1.

Best collection of asters, M. Flanagan, Kingston, \$2; 2nd do, G. H. Hart, Picton, \$1 50; 3rd do, G. S. Miller, Virgil, \$1.

Best collection of 10 weeks' stock, G. H. Hart, Picton, \$2, 2nd do, R. C. Gill, Colborne, \$1 50; 3rd do, J. Williamson, Kingston, \$1.

Best floral ornament or design, Thomas Wilson, Kingston, \$5; 2nd do, Miss Mary V. Ferguson, Kingston, \$4; 3rd do, J. M. Hirschfelder, Toronto, \$3.

Best 12 verbenas, M. Flanagan, Kingston, \$2; 3rd do, R. Curry, Brockville, \$1.

Best collection of verbenas, M. Flanagan, Kingston, \$3.

Best 6 petunias, T. Briggs, Kingston, \$2; 2nd do, R. Curry, Brockville, \$1 50; 3rd do, J. M. Hirschfelder, Toronto, \$1.

Best collection perennial phloxes, B. Losee,

Cobourg, \$2; 2nd do, M. Flanagan, Kingston, \$1 50.

Best display of plants in flower, distinct from other entries, J. M. Hirschfelder, Toronto, \$10; 2nd do, Jas. Fleming, Toronto, \$6; 3rd do, Miss C. E. Briggs, Kingston, \$4.

Best collection of native plants, dried and named, W. Williamson, jr. Smith's Falls, \$5; 2nd do, A. T. Drummond, Kingston, \$3; 3rd do, T. W. Poole, Norwood, \$2.

EXTRA ENTRIES.

Ferns grown under grass, J. P. Litchfield, Portsmouth, \$1.

Display of everlasting flowers, M. Flanagan, Kingston, \$1; do, gladioli, do, do, \$1; do, phlox Drummondii, do, do, \$1; do, double zinneas, do, do, \$1; Petunias, J. M. Hirschfelder, Toronto, \$1; 6 foliage plants, do, do, \$1; collection of marigolds, Rev. J. Williamson, Kingston, \$1; bouquet everlasting flowers, G. H. Hart, Picton, \$1; display of double zinneas, do, do, \$1; do, Japan Pinks, do, do, \$1; do, gladioli, J. Fleming, Toronto, \$1; sunflowers, Mrs. Weinecker, Kingston, \$0 50; collection of anterrhinums, Rev. Dr. Williamson, Kingston, \$1.

REMARK.—The Judges beg to report that the display in plants and flowers does not come up to former years, and the competition limited to a few.

CLASS XXXIV.—DAIRY PRODUCTS, HONEY, BACON, &c.—105 Entries.)

Judges.—T. Briggs, Kingston; L. Naismith, Bennie's Corners; G. J. Smith, Lennox; W. Brough, Gananoque.

Best firkin of butter, in shipping order, not less than 56 lbs, Nelson Dollar, Fredericksburg, \$12; 2nd do, Charles Shibley, Portland, \$10; 3rd do, John H. Burch, Wolf Island, \$8; 4th do, John Amey, Camden East \$6.

Best butter, not less than 28 lbs., in firkin, crock, or tub, J. C. Murray, Kingston, \$8; 2nd do, R. W. Graham, Kitley, \$6; 3rd do, Miss Mary Thomson, York Tp., \$4; 4th do, Nelson Dollar, Fredericksburg, \$2.

Best cheese, not less than 30lbs, Platt Human, Haldimand Tp., \$10; 2nd do, John Piercy, Ernestown, \$3; 3rd do, H. & E. F. Cooper, Watertown, N. Y., \$6; 4th do, W. R. Dorn, Ernestown, \$4; extra, Geo. Morton, Morton, \$2.

Best two Stilton cheese, not less than 12 lbs. each, H. K. Parsons, Guelph, \$10; 2nd

do, do, do, \$8; 3rd do, do, do, \$6; 4th do, John Piercy, Ernestown, \$4.

Best honey in the comb, not less than 10 lbs., F. S. Clench, Cobourg, \$3; 2nd do, R. Spooner, Kingston, \$2; 3rd do, Nelson Dollar, Fredericksburg, \$1.50; 4th do, E. Jackson, Kingston, Trans.

Best jar of clear honey, F. S. Clench, Cobourg, \$4; 2nd do, George Miller, Markham, \$2; 3rd do, C. Brown, Camden, \$1.50; 4th do, John Jackson, Newburgh, Trans.

Best 30 lbs maple sugar, Platt Hinman, Haldimand Tp., \$3; 2nd do, John Amey, Camden E., \$2; 3rd do, Timothy Donovan, Kingston, \$1.

Best ham, cured, John Ball, Toronto, \$3.

EXTRA ENTRIES.—Bees wax, E. Jackson, Kingston, \$1; pig's feet and boar's head, A. Cicolari, Kingston, \$2; roast pig and Bologna sausage, do, do, \$2; lard in can, E. Jackson, Kingston, 50c.

CLASS XXXV.—AGRICULTURAL IMPLEMENTS, WORKED BY HORSE OR OTHER POWER—
(160 Entries).

Judges.—E. Gregory, St. Catharines; P. Hinman, Cobourg; D. Stanton, Picton; R. Graham, Lindsay; and J. N. Diamond, Belleville.

Best iron plough, Wm. Mahaffey, Brampton, (draught on trial 437½ lbs.), diploma and \$12; 2nd do, James Jeffrey, Petite Cote, (draught 503 lbs.), \$8; 3rd do, Geo. Morley, Thorold, (draught 520 lbs.), \$4.

Best wooden plough, G. Morley, Thorold, (draught 575 lbs.), diploma and \$12; 2nd do, T. Modeland, Brampton, (draught 581 lbs.), \$8; 3rd do, Wm. Mahaffey, Brampton, (draught 600 lbs.), \$4.

Best subsoil plough, G. Morley, Thorold, \$12 and diploma; 2nd do, Chown & Cunningham, Kingston, \$8.

Best double shear trench plough, H. A. Massey, Newcastle, \$10; 2nd do, T. Zealand, Port Hope, \$6.

Best double mould plough, James Jeffrey, Petite Cote, Montreal, \$10; 2nd do, Henry Collard, Gananoque, \$6; 3rd do, Chown & Cunningham, Kingston, \$4.

Best pair of harrows, Henry Collard, Gananoque, \$5; 2nd do, do, do, \$4; 3rd do, Chown & Cunningham, Kingston, \$2.

Best horse power thresher and separator, Joseph Hall, Oshawa, diploma and \$20; 2nd do, J. Conolly, Yarker, \$12.

Best grain drill, Maxwell & Whitelaw, Paris, diploma and \$12; 2nd do, Frederick Davey, London, \$8.

Best straw cutter, Maxwell & Whitelaw, Paris, \$5; 2nd do, R. & R. S. Patterson, Belleville, \$4; 3rd do, S. D. Purdy, Collins Bay, \$3.

Best portable grist mill, H. A. Massey, Newcastle, second prize, \$8.

Best corn and cob crusher, R. & R. S. Patterson, Belleville, \$4.

Best cider mill and press, A. Harris & Son, Beamsville, \$12.

Best two-horse team waggon, Webster & Boyce, Napanee, \$12; 2nd do, Samuel Lake, Newburgh, \$8; 3rd do, Welder Joy, Napanee, \$4.

Best two-horse spring market waggon, Samuel Lake, Newburgh, \$10; 2nd do, Francis Tracy, Kingston, \$7.

Best one-horse light market waggon, Wm. Draper, Kingston, \$9; 2nd do, Samuel Lake, Newburgh, \$6.

Best horse-cart, James Jeffrey, Petite Cote, Montreal, \$6; 2nd do, Francis Tracy, Kingston, \$4.

Best farm sleigh, S. D. Purdy, Collins Bay, 3rd prize, \$2.

Best horse rake, S. D. Purdy, Collins Bay, \$4; 2nd do, W. Harker, Kingston, \$3; 3rd do, F. Painchaud, Varennes, C. E., \$2.

Best metal roller R. & R. S. Patterson, Belleville, \$11; 2nd do, Chown & Cunningham, Kingston, \$8.

Best wooden roller, Eckardt & Jones, Markham, \$10; 2nd do, S. D. Purdy, Collins Bay, \$5.

Best stump extractor, G. F. Beebe, Sophiasburg; 2nd do, Jas. Conolly, Yarker, \$4.

Best reaping machine, Jos. Hall, Oshawa, diploma and \$20; 2nd do, H. A. Massey, Newcastle, \$12; 3rd do, Isaac Modeland, Brampton, \$8.

Best mowing machine, R. & R. S. Patterson, Belleville, diploma and \$20; 2nd do, Jos. Hall, Oshawa, \$12; 3rd do, John Hemming, Napanee, \$8.

Best combined mower and reaper, R. & R. S. Patterson, Belleville, diploma and \$20; 2nd do, Joseph Hall, Oshawa, \$12; 3rd do, H. A. Massey, Newcastle, \$8.

Best field or two-horse cultivator, A. C. Bruce, Glen Morris, \$12; 2nd do, Eckhardt & Jones, Markham, \$8; 3rd do, Joshua Carlton, York tp., \$4.

Best horse hop or single horse cultivator, T. Scott, Newburgh, \$4; 2nd do, Hy. Collard, Gananoque, \$3.

Best machine for sinking field drains and laying in and over tiles, Jos. Hall, Oshawa, \$60.

Best improved liquid manure drill, for drilling two or more rows of liquid with turnips, mangels, &c., either on the ridge or flat, E. Rockey, Malahide, \$25.

EXTRA ENTRIES.—Wood sawing machine, V. Mitchell, J. r., Cavan, \$2; self-unloading, waggon box, L. P. Bowerman, Bloomfield, \$3; machine for upsetting waggon-tire, Wm. Tubbs, Picton, \$1; combined sower for all kinds of small seeds, E. Rockey, Malahide, \$2; gang plough, Henry Collard, Gananoque, \$2; horse-power, J. M. Kinney, Brantford, \$2. Model of a new field roller, John R. Martin, Cayuga, highly commended; patent revolving cultivator and model with seeder attached, John Walmsley, Berlin, \$3.

CLASS XXXVI.—AGRICULTURAL TOOLS AND IMPLEMENTS, CHIEFLY FOR HAND USE.—
(124 ENTRIES.)

Judges—M. C. Lutz, Galt; D. G. McDonald, Glengary; and D. Douglass, Warkworth.

Best fanning mill, R. & R. S. Patterson, Bellville, diploma and \$6; 2nd do, James McRea, Kingston, \$4; 3rd do, Geo. Walker, tp. of Kingston, \$2.

Best seed drill, or barrow, E. Rockey, Malahide, \$4; 2nd do, do, do; 3rd do, W. & T. Walker, Brampton, \$2.

Best straw cutter, Maxwell & Whitelaw, Paris, \$5; 2nd do, J. Conolly, Yarker, \$4.

Best Machine for cutting roots for stock, James Gibson, Kingston tp., 3rd prize, \$2.

Best cheese-press, F. S. Clench, Cobourg, \$8.

Best churn, Robt. Medcalf, Carleton Place, \$3; 2nd do, H. P. Clow, Napanee, \$2.

Best garden, walk, or lawn roller, H. A. Massey, Newcastle, \$4; 2nd do, Chown & Cunningham, Kingston, \$2; 3rd do J. J. Whitehead, Kingston, \$1.

Best farm gate, P. W. Foreman, Loughboro, \$3.

Best specimen farm fence, wood, Henry Collins, Gananoque, 3rd prize, trans.

Best specimen wire fencing, not less than two rods, erected on the ground, W. & T. Walker, Toronto tp., \$8.

Best wooden pump, John Brokenshire, Kingston, \$4; 2nd do, do, do, \$3; 3rd do, do, do, \$2.

Best 6 hay-rakes, Thomas Bryan, Jr., tp. of London, \$3; 2nd do, do, do, \$2.

Best 6 scythe snaiths, Ed. Roblin, Sophiasburg, \$3; 2nd do, S. Skinner, Gananoque, \$2.

Best ox-yoke and bows, H. Spooner, Storrington, \$2; 2nd do, P. Hinman, Haldimand, \$1.

Best grain cradle, T. Bryan, jr., London, \$2; 2nd do, Richard Sylvester, Scarborough, \$1; 3rd S. Skinner, Gananoque, \$0 50.

Best half dozen grain showels, D. F. Jones & Co., Gananoque, \$3; 2nd do, Fotheringham & Workman, Montreal, \$2; 3rd do, D. F. Jones & Co., Gananoque, \$1.

Best half-dozen iron (flat) shovels, Fotheringham & Co., Montreal, \$3; 2nd do, D. F. Jones & Co., Gananoque, \$2; 3rd do, do, do, \$1.

Best half-dozen spades, Fotheringham & Workman, Montreal, \$3; 2nd do, do, do, \$2; 3rd do, D. F. Jones & Co., Gananoque, \$1.

Best half-dozen grass scythes, J. W. Robinson, Bridgewater, \$3; 2nd do, Fotheringham & Workman, Montreal, \$2.

Best machine for making drain tiles, Wm. Lindsay, Newcastle, diploma and \$20.

Best set of draining tools, D. F. Jones & Co., Gananoque, \$6.

Best assortment of drain tiles, John Mathew, Yorkville, \$6; 2nd do, C. P. Treadwell, Prescott Co., \$4.

Best straw fork, wood, Miles Storm, Camden, \$2.

Best implement or machine for cutting, pulling or otherwise harvesting peas, hand or horse power, Henry Collard, Gananoque, \$10.

Best 6 chopping axes, Fotheringham & Workman, Montreal, \$3.

Best set horse shoes, Wm. Mahaffey, Brampton, \$2; 2nd do, do, do, \$1; extra, (racing plates,) John Kennedy, Peterborough, \$1.

Best half-dozen axe handles, John Asseltine, Ernestown, \$2; 2nd do, H. Spooner, Storrington, \$1.

EXTRA ENTRIES.—Half doz. barley forks, R. Collins, Camden, \$1; cheese vat, S. R. Brooks, Sophiasburg, \$2; sett of buggy draught irons, F. Tracey, Kingston, \$2; power churn, H. P. Clow, Napanee, \$2; boring machine, Wm. Driscoll, Merricksville, \$1; machine for sowing plaster, James McRea, Wolf Island, \$2; spinning wheel, Thos. McDermott, Kingston, \$2; transplanter, F. Milo, Kingston, \$1; straw fork, R. Collins, Camden, \$1; Cheese vat, H. & E. F. Cooper, Watertown, N. Y., \$3.

CLASS XXXVII.—CATTLE FOOD—MANURES, AND MISCELLANEOUS.

Judges.—D. Campbell and J. Southworth.

Best specimen oil cake, Lyman, Clare & Co., Montreal, \$4; 2nd do, do, do, \$2.

Best specimen superphosphate of lime for manure, Coe & Co., Montreal, \$4.

Best specimen ground plaster for manure, Lyman Clare & Co., Montreal, \$4.

REMARKS.—The judges in class 37 beg to report that they have completed their examination of the articles exhibited in this class, and regret that they are so few in number. They have to state that the oil cake is very excellent, carefully prepared, free from grit, &c., and worthy of the premium awarded.

ARTS AND MANUFACTURES DEPARTMENT.

CLASS XXXVIII.—CABINET WARE, AND OTHER WOOD MANUFACTURES—31 Entries.

Judges.—G. Stephens, Cobourg; W. Irving, Kingston; and F. S. Clench, Cobourg.

Best set of bedroom furniture, S. T. Drennan, Kingston, \$10.

Best centre table, S. T. Drennan, Kingston, \$7.

Best drawing room sofa, S. T. Drennan, Kingston, \$7.

Best set of drawing room chairs, S. T. Drennan, Kingston, \$7.

Best sideboard, S. T. Drennan, Kingston, \$6.

Best coopers' work, S. O. Grady, Oil Springs, \$4; 2nd do, Andrew Bridge, Kingston Tp, \$3.

Best dozen corn brooms, R. L. Clark, Ernestown, \$2.

Best assortment of joiner's work, Anson Storm, Odessa, \$8.

Best veneers from Canadian woods, undressed, Wm. Clement, Newburg, \$3.

EXTRA ENTRIES.—Patent bee-hive and bees, S. D. Purdy, Collins' Bay, \$2; bee-hive, David Purdy, Kingston Tp, \$3; Washing Machine, H. P. Clow, Napanee, \$3; Bee hive, George Walker, Kingston Tp, \$4; Bee-hive, J. M. Grover, Colborne, \$4; Window blind and sun shade, W. J. Lucas, London, Diploma and \$6; Cricket bats and wickets, W. Peacock, Montreal, \$5; Roller wash board, S. J. Ward, Belleville, \$2; Beech wood knot, F. Burrowes, King, \$4; Machine wrought siding, A. Storm, Odessa, \$2; Washing Machine, N. H. Nutting, Marysburg, \$5.

REMARKS.—The Judges regret to find so few entries in Cabinet Ware, and having learned from cards on the furniture entered that all the articles shown were from the Penitentiary, we think that this is the cause of no other entries being made. We therefore doubt the propriety of allowing this work to come in competition with that of the honest mechanics of the Province.

CLASS XXXIX.—CARRIAGES AND SLEIGHS, AND PARTS THEREOF—(82 Entries).

Judges.—M. Donovan, Whitby; E. Cooney, Cobourg; J. Falconer, Kingston.

Best wrought iron axle, A. C. Chewett & Co., Kingston, \$3 and diploma; 2nd do, Byers & Matthew, Gananoque, \$2.

Best bent shafts, half a dozen, R. McKinley & Co, St. Catharines, \$3; 2nd do, Fralick Bros. Picton, \$2.

Best bows for carriage tops, two sets, R. McKinley & Co., St. Catharines, \$3.

Best double seated buggy, Hart & Son, Picton, \$8; 2nd do, Samuel Lake, Newburgh, \$4.

Best single seated buggy, Fralick Bros., Picton, \$7.

Best two-horse pleasure carriage, Hart & Son, Picton, \$12; 2nd do, A. Titus, Farmersville, \$7.

Best one-horse pleasure carriage, Fralick Bros., Picton, \$8; 2nd do, S. Lake, Newburgh, \$4.

Best two pairs carriage hubs, John Eakin, Markham, \$3; 2nd do, do, do, \$2.

Best two pairs carriage rims or felloes, R. McKinley & Co., St. Catharines, \$2; 2nd do, Fralick Bros., Picton, \$1.

Best doz. machine made carriage spokes, T. C. Saunders, St. Catharines, \$3 and Dip.

Best two-horse pleasure sleigh, Hart & Son, Picton, \$10; 2nd do, do, do, \$6.

Best one-horse pleasure sleigh, Fralick Bros., Picton, \$8; 2nd do, S. Lake, Newburg, \$4.

Best sulky, trotting, Samuel Lake, Newburg, 2nd prize, \$3.

EXTRA ENTRIES.—Best seat rails for buggies, Fralick Bros., Picton, \$2. Carriage hub and axle, [all iron] A. C. Chewett & Co, Kingston, \$3 and Diploma.

2 sets of bent rims for buggies, R. McKinley & Co., St. Catharines, \$2; 2 sets do, do, for waggons, do, do, do, \$2; 2 sets do, do, for sulkies, do, do, do, \$2.

Assortment of Bent Stuff for waggons, sleighs, and buggies, R. McKinley & Co., St. Catharines, \$5.

Assortment of spokes for waggons, sulkies, and buggies, Thomas C. Saunders, St. Catharines, \$2.

Remarks.—The judges regret not finding a larger assortment of manufactured articles in class 39, but hope at the next annual Exhibition to find an improvement in that respect.

CLASS XL.—CHEMICAL MANUFACTURES AND PREPARATIONS.—(22 Entries.)

Judges.—Dr. Holden, Cobourg; Dr. Beattie, Cobourg.

Best assortment of essential oils, Lyman, Clare & Co., Montreal, \$6; 2nd do, J. A. Taylor & Co., Napanee, \$4.

Best medicinal herbs, roots and plants, native growth, T. W. Poole, Norwood, \$12; 2d do, W. Saunders, London, \$7.

Best oils, linseed and rape, and other expressed kinds, Lyman, Clare & Co., Montreal, \$6.

Best oil, coal, shale or rock, W. Esmonde & Co., Oakville, \$6; 2nd do, Parson, Bros., Toronto, \$4.

Best oil, Neat's foot, half gallon, Lyman, Clare & Co., Montreal, \$2.

Best assortment of varnishes, Lyman, Clare & Co., Montreal, \$6.

EXTRA ENTRIES.—Shoe blacking, G. Robertson, Kingston, \$2; Ground paint, Lyman, Clare & Co., Montreal, \$6; Assorted perfumery, do, do, do, \$3; Assorted perfumery and hair brushes, G. S. Hobart, Kingston, Diploma; Assortment of perfumery, pomades, &c., John A. Taylor, Napanee, \$2; Benzole or mineral turpentine, Parson, Bros., Toronto, \$2; Powdered drugs, Lyman, Clare & Co., Montreal, \$6 and Diploma; Ground dye-stuffs, Lyman, Clare & Co., Montreal, \$4.

CLASS XLI.—DECORATIVE AND USEFUL ARTS, DRAWINGS AND DESIGNS.—(69 Entries.)

Judges.—John Shier, Whitby; Henry Langley, Toronto.

Best carving in wood, S. J. Seaman, Brockville, \$6; 2nd do, do, do, \$4.

Best decorative house painting, G. D. Lucas, Toronto, \$5.

Best decorative sign-writing, on glass, G. D. Lucas, Toronto, \$4; 2nd do, F. Richardson, Napanee, \$2.

Best geometrical drawing of engine or mill work, coloured, G. P. Drummond, Mitchell, 2nd prize, \$3.

Best lithographic drawing, W. C. Chewett & Co., Toronto, \$5; 2nd do, Brown & Bank, Hamilton, \$3.

Best lithographic drawing, coloured, W. C. Chewett & Co., Toronto, \$6; 2nd do, Brown & Bank, Hamilton, \$4.

Best map of Canada, lithographed, G. Tremaine, Toronto, \$6.

Best mathematical, philosophical, and surveyor's instruments, collection of, A. F. Potter, Toronto, \$15; 2nd do, Wm Quinton, Kingston, \$10.

Best picture frame, ornamented gilt, A. J. Pelt, Montreal, \$5.

Best penmanship, business hand, H. Wright, Toronto, \$4; 2nd do, do, Bryant, Stratton, & Day, Toronto, \$2.

Best sign writing, G. D. Lucas, Toronto, \$4.

EXTRA ENTRIES.—Gold and silver leaf, C. H. Hubbard, Toronto, \$5; dentist's gold and silver foil, do, do, \$5; weather indicator, G. Wolfe, Bridgewater, \$3; sun dial, W. H. Shepherd, Toronto, \$5; water metre, James Hurlburt, Reach, \$5; Lithographic printing, check books, copy books, &c., Brown & Banks, Hamilton, \$3; lithographic printing, W. C. Chewett & Co., Toronto, \$5; carving in marble, E. Strong, Kingston, \$3; chess board table top in water colors, R. W. Taylor, Kingston, \$3; specimen of marble, William Knowles, Arnprior, \$5.

CLASS XLII.—FINE ARTS.—(189 Entries.)

Judges.—J. D. Humphreys, Toronto; F. J. Rastrick, Hamilton; W. H. Peterson, Guelph.

Professional List—Oil.

Best animals, grouped or single, W. N. Cresswell, Harpurhey, \$12; 2nd do, R. Whale, Burford, \$7.

Best historical painting, R. Whale, Burford, \$12; 2nd do, W. N. Cresswell, Harpurhey, \$7.

Best landscape, Canadian subject, W. N. Cresswell, Harpurhey, \$12; 2nd do, R. Whale, Burford, \$7.

Best landscape, or marine painting, not Canadian subject, W. N. Cresswell, Harpurhey, \$10; 2nd do, F. Richardson, Napanee, \$6.

Best marine painting, Canadian subject, W. N. Cresswell, Harpurhey, \$12; 2nd do, do, \$7.

Best portrait, W. Sawyer, Kingston, \$10; 2nd do, do, do, \$6.

In Water Colors.

Best animals, grouped or single, W. N. Cresswell, Harpurhey, \$7.

Best flowers, grouped or single, John Griffith, London, \$7; 2nd do, Miss Amelia F. H. Gibbon, Weston, \$5.

Best landscape, Canadian subject, Captain Caddy, Hamilton, \$7; 2nd do, W. N. Cresswell, Harpurhey, \$5.

Best landscape, or marine painting, not Canadian subject, W. N. Cresswell, Harpurhey, \$7; 2nd do, Captain Caddy, Hamilton, \$5.

Best marine painting, Canadian subject, W. N. Cresswell, Harpurhey, \$7.

Pencil, Crayon, &c.

Best crayon, coloured, Miss Amelia F. H. Gibbon, Weston, \$6.

Best crayon, plain, Miss Lucy Ritchie, Kingston, \$6; 2nd do, do, do, \$4.

Best pencil drawing, Miss Amelia F. H. Gibbon, Weston, \$6.

Best pen and ink sketch, Miss Amelia F. H. Gibbon, Weston, \$6; 2nd do, F. A. Verner, Toronto, \$4.

Amateur List—Oil.

Best animals, grouped or single John H. Whale, Burford, \$8; 2nd do, do, do, \$5.

Best historical painting, John H. Whale, Burford, \$8; 2nd do, Miss M. Gordon, Port Colborne, \$5.

Best landscape, Canadian subject, John H. Whale, Burford, \$8; 2nd do, do, do, \$5.

Best landscape or marine painting, not Canadian subject, John H. Whale, Burford, \$8; 2nd do, Miss M. Gordon, Port Colborne, \$5.

Best marine painting, Canadian subject, John H. Whale, Burford, \$8.

Best portrait, John H. Whale, Burford, \$7; 2nd do, do, do, \$5.

In Water Colors.

Best Animals, grouped or single, D. Fowler, Amherst Island, \$7; 2nd do, Miss Georgina Holland, Bowmanville, \$5.

Best flowers, grouped or single, James Griffith, London, \$5; 2nd do, D. Fowler, Amherst Island, \$3.

Best landscape, Canadian subject, D. Fowler, Amherst Island, \$7; 2nd do, T. D. Belfield, Grafton, \$5.

Best landscape or marine painting, not Canadian subject, T. D. Belfield, Grafton, \$7; 2nd do Mrs. Berry, Kingston, \$5.

Best marine view, Canadian subject, T. D. Belfield, Grafton, \$7.

Best portrait, D. Fowler, Amherst Island, \$6.

Pencil, Crayon, &c.

Best crayon, colored, Miss Thomson, Kingston, \$5; 2nd do, D. Fowler, Amherst Island, \$3.

Best crayon, plain, E. A. Mara, Ottawa, \$5; 2nd do, Miss Thomson, Kingston, \$3.

Best crayon or pencil portrait, D. Fowler, Amherst Island, \$5; 2nd do, Miss Elizabeth Robertson, Colborne, \$3.

Best pencil drawing, E. M. Edmonds, Burnstown, \$5; 2nd do, D. Fowler, Amherst Island, \$3.

Best pen and ink sketch, J. T. Burnside, Cobourg, \$5; 2nd do, do, do, \$3.

Photography.

Best collection of ambrotypes, H. K. Sheldon, Kingston, \$6.

Best collection of photograph portraits, in duplicate, one set colored, R. W. Anderson, Toronto, \$10.

Best collection of photograph portraits, plain, H. K. Sheldon, Kingston, \$8; 2nd do, Stanton, Cox & Hayden, Cobourg, \$5.

Best collection of photograph landscapes and views, Miss M. Kedgill, Kingston, \$8; 2nd do, R. W. Anderson, Toronto, \$5.

Best photograph portraits in oil, W. Sawyer, Kingston, \$8; 2nd do, do, do, \$5.

EXTRAS.—Professional, fruit in oil, R. A. Pauling, Hamilton, \$4; photograph in water colors, Stanton, Cox & Hayden, Cobourg, \$4; painting in velvet, R. W. Taylor, Kingston, \$3.

CLASS XLIII.—GROCERIES AND PROVISIONS— (76 Entries).

Judges.—A. McNaughton, Newcastle; T. Beeman, Newcastle.

Best barley, pearl, A. W. Ogilvie & Co., Montreal, \$3; 2nd do, D. Hooper, Newburgh, \$2.

Best barley, pot, A. W. Ogilvie & Co., Montreal, \$3; 2nd do, D. Campbell, Charlottenburgh, \$2.

Best bottled fruits, an assortment, manufactured for sale, Miss Mary Ann Dumble, Kingston, 2nd prize, \$4.

Best bottled pickles, an assortment, manufactured for sale, A. H. Campbell, Storrington, \$6.

Best buckwheat flour, D. Hooper, Newburgh, \$3; 2nd do, R. Denison, Napanee, \$2.

Best chicory, 20 lb. of, George Robertson, Kingston, \$3.

Best Indian corn meal, Ogilvie & Co., Montreal, \$3; 2nd do, D. Hooper, Newburgh, \$2.

Best mustard, one jar, F. H. Ewing & Co, Montreal, \$2.

Best oatmeal, James Russell, Pickering, \$3.

Best soap, one box of common, P. Freeland & Co., Toronto, \$4; 2nd do, do, do, \$3.

Best soaps, collection of assorted fancy, G. S. Hobart, Kingston, \$6; 2nd do, Sam. Phippin, do, \$4.

Best spices, ground, an assortment of, Lyman, Clare & Co., Montreal, \$2; 2nd do, George Robertson, Kingston, \$1.

Best starch, 12 lbs of corn, Benson & Aspden, Edinburgh, \$2.

Best tobacco, 14 lbs., Canadian Manufacture, S. S. Preston, Toronto, diploma and \$4.

Best wheat flour, G. Wheeler, Uxbridge, \$5; 2nd do, James Durand, Kingston, \$3.

EXTRA ENTRIES.—Two dozen each, James Fisher, Portsmouth, \$2; 1 box candles, Samuel Phippin, Kingston, \$3; Ground coffee and rice, J. A. Karch, Kingston, \$2; cigars, Canadian manufacture, S. Oberndorfer & Co., Kingston, diploma; prepared corn for food, Benson & Aspden, Fredericksburg, \$2; ground coffee, G. S. Robertson, Kingston, \$2; preserves in jars, H. Dumble, Kingston, \$1; bottled pale ale, L. Livingston, Kingston, \$3; loaf of home made bread, F. B. Bby, Kingston, \$1; mustard pickled cucumbers, Mrs. Weinacker, Waterloo, \$1; preserves in jars, E. Jackson, Kingston, \$4.

CLASS XLIV.—LADIES' WORK—(325 Entries).

Judges.—Mrs. F. Burnett, Cobourg, Mrs. W. H. Sheppard, Toronto; Miss Hattie Stephens, Cobourg.

Best bead work, Miss P. Lenea, Kingston, \$3; 2nd do, do, do, \$2; 3rd do, S. A. Bibby, do, \$1.

Best braiding, Mary Ann Dumble, Kingston, \$3; 2nd do, do, do, \$2; 3rd do, Miss H. Bidwell, Colborne, \$1.

Best crochet work, Miss Phillips, Prescott, \$3; 2nd do, W. Wolf, Storrington, \$2; 3rd do, E. T. Hill, Kingston, \$1.

Best embroidery in muslin, J. G. Strachan, Pittsburg, \$3; 2nd do, Mary Ann Dumble, Kingston, \$2; 3rd do, Miss J. A. Ramsey, Pittsburg, \$1.

Best embroidery in silk, Miss Scott, Prescott, \$3; 2nd do, Mrs. T. Wilson, Kingston, \$2; 3rd do, Miss Bennett, Cobourg, \$1.

Best gloves, three pairs, Mrs. Platt Hinman, Haldimand, \$2; 2nd do, Mrs. Edward Jackson, Kingston, \$1; 3rd do, Mrs. Litchfield, Portsmouth, 50c.

Best guipure work, Miss H. Bidwell, Col-

borne, \$3; 2nd do, do, do, \$2; 3rd do, Elizabeth T. Hill, Kingston, \$1.

Best hair work, Mary Rattenbury, Harpurhy, \$3; 2nd do, Annie Robertson, Colborne, \$2; 3rd do, J. Hitchcock, Portsmouth, \$1.

Best knitting, Miss J. A. Ramsay, Pittsburg, \$3; 2nd do, Mrs. Unwin, Toronto, \$2; 3rd do, Mrs. P. Perry, Whitby, \$1.

Best lace work, Miss H. Bidwell, Colborne, \$3; 2nd do, Alice L. Hill, Kingston, \$2; 3rd do, Mrs. A. M. Mills, \$1. Extra—Mrs. Mary Hart, Port Hope, \$3.

Best mittens, three pairs of woollen, Mrs. E. Jackson, Township of Kingston, \$2; 2nd do, Mrs. Platt Hinman, Haldimand, \$1; 3rd do, Mrs. E. Jackson, Township of Kingston, 50c.

Best needle-work, ornamental, J. A. Ramsay, Pittsburg, \$2; 2nd do, Miss Dwyer, Kingston, \$2; 3rd do, Margaret Mann, Brockville, \$1.

Best netting, fancy, Mary R. Hill, Kingston, \$3; 2nd do, S. Hyman, Kingston, \$2; 3rd do, Mary R. Hill, Kingston, \$1.

Best plait for bonnets or hats, of Canadian straw, John Hopkins, Collins' Bay, \$3; 2nd do, do, do, \$2; 3rd do, Mrs. H. Stickle, Cobourg, \$1.

Best shirt, gentlemen's, Margaret Mann, Brockville, \$3; 2nd do, Miss Bennett, Cobourg, \$2; 3rd do, do, do, \$1.

Best socks, three pairs of woollen, Mrs. Platt Hinman, Haldimand, \$2; 2nd do, Miss Bennett, Cobourg, \$1; 3rd do, E. Jackson, Township of Kingston, 50c.

Best stockings, three pairs of woollen, Mrs. Bennett, Cobourg, \$2; 2nd do, Mrs. E. Jackson, Kingston, \$1; 3rd do, R. L. Clark, Ernestown, 50c.

Best tatting, J. A. Ramsay, Pittsburg, \$3; 2nd do, A. L. Hill, Kingston, \$2; 3rd do, C. F. Dupuy, Kingston, \$1.

Best wax fruit, Miss L. Purvis, Mallorytown, \$6; 2nd do, Mrs. Jacob Bajus, Kingston, \$4; 3rd do, J. A. Ramsay, Pittsburg, \$2.

Best wax flowers, Mrs. Jacob Bajus, Kingston, \$6; 2nd do, Arch McGreer, Napanee, \$5; 3rd do, J. A. Ramsay, Pittsburg, \$2.

Best worsted work, Mrs. Unwin, Toronto, \$3; 2nd do, J. A. Ramsay, Pittsburg, \$2; 3rd do, Charlotte Spencer, Kingston, \$1.

Best worsted work (fancy) for framing, W. Wolf, Storrington, \$3; 2nd do, S. D. Purdy, Collins' Bay, \$2; 3rd do, Mrs. Ferris, Kingston, \$1.

Best worsted work [raised] J. A. Ramsay, Pittsburg, \$3; 2nd do, Miss Abercrombie, Pictou, \$2; 3rd do, J. A. Ramsay, Pittsburg, \$1.

EXTRA ENTRIES.—Fancy quilt—piece work—Mrs. Amey, Camden, \$1; sample machine sewing, R. Wanzer & Co., Hamilton, \$2; fancy quilts, Mrs. Bowman, Kingston, \$2; farmer's wreath, made from seeds, Mrs. Fairman, Pittsburg, \$3; moss wreath, Mrs. Storms, Ernestown, \$1; bed quilts, Mrs. A. M. Mills, Kingston, \$2; straw bonnets and hats, Mrs. John Hopkins, Collins' Bay, \$3; wax baskets, Mrs. Jacob Bajus, Kingston, \$4; cone vase and frame work, Miss Mary Ann Jones, Kingston, \$6; model cottage and moss wreath, Mrs. Mary Lane, Belleville, \$6; feather wreath and bouquet, Mrs. Hitchcock-Portsmouth, \$3; farmers' wreath and patched quilts, Miss A. J. Peck, Ameliasburg, \$5; quilt, Mrs. Miller, North Fredericksburg, \$2; leather work frame and paper flowers, Mrs. Dunn, Kingston, \$2; quilt, Mrs. Briscoe, Kingston, \$1; feather flowers, Mrs. Meadows, Kingston, \$2; muslin and wax flowers, Mrs. G. Hunte, Kingston, \$3; case of millinery, Mrs. Angline, Kingston, \$4; Landscape, Miss Sarah Webster, Montreal, \$3; moss and shell work, Miss Harris, Kingston, \$2; silver wire flowers, Miss M. Gordon, Port Colborne, \$3; chenille work, Miss Duryee, Kingston, \$3; bonnets and head dresses, Mrs. W. P. Lacey, Kingston, \$4; quilt, Miss W. D. Wood, Cornwall, \$2; wax vase and wreath, Mrs. Bajus, Kingston, \$3; cordon work, Miss H. Bidwell, Colborne, \$2; dried sea mosses, Mrs. Jesse Thayer, Montreal, \$4.

XLV.—MACHINERY, CASTINGS, AND TOOLS.—
(43 Entries.)

Judges.—T. Wilson, C. Bickell, Jas. Smith.
Best edge tools, an assortment, Fotheringham and Workman, Montreal, \$15; 2nd do, J. W. Robinson, Bridgewater, \$10.

Best pump, in metal, John Brokenshire, Kingston, \$5.

Best refrigerator, Chown & Cunningham, Kingston, \$6; 2nd do, R. M. Horsey, Kingston, \$4.

Best sewing machine, manufacturing, R. M. Wanzer & Co., Hamilton, \$8; 2nd do, Irwin & White, Belleville, \$5.

Best sewing machine, family, Irwin & White, Belleville, \$8; 2nd do, R. M. Wanzer & Co., Hamilton, \$5.

Best skates, an assortment of, D. F. Jones & Co., Gananoque, \$6.

EXTRA ENTRIES.—Sewing machine needles, R. Wanzer & Co., Hamilton, commended; blacksmiths' tuyere iron, for forge, Eckardt & Jones, Markham, commended; hand-power wood-sawing machine, Bender & Lewis,

Clifton, \$4; another do, Richmond & Thomas, London, \$2; model of railway switches, J. Kitching, Kingston, diploma; two cases of augurs, Fotheringham & Workman, Kingston, \$6; coopers' tools, H. H. Date, Gal, \$5; water-wheel, R. N. Kendall, Coaticoke, C. E., diploma; steam amalgam bells, A. T. Burton & Co., Uxbridge, \$6; hot and cold grain dryer, Sutton & Gibson, Brantford, diploma.

CLASS XLVI.—METAL WORK, (MISCELLANEOUS) INCLUDING STOVES.—(78 Entries.)

Judges.—A. McNeil, W. McMichael, S. Shaw, Toronto.

Miscellaneous.

Best coal oil lamps, an assortment, R. M. Horsey, Kingston, \$8.

Best coppersmith's work, an assortment, J. G. Beard & Sons, Toronto, \$7; 2nd do, R. M. Horsey, Kingston, \$4.

Best engineer's brass work, an assortment, T. C. Collins, Toronto, \$6.

Best iron fencing and gate, ornamental, Chown & Cunningham, Kingston, \$7.

Best iron work, ornamental cast, Chown & Cunningham, Kingston, \$6.

Best nails, 20 lbs of pressed, Cowan & Britton, Gananoque, 2nd prize, \$4.

Best nails, 20 lbs of cut, Cowan & Britton, Gananoque, 2nd prize, \$4.

Best plumber's work, an assortment, G. McDonald, Kingston, \$6.

Best screws and bolts, an assortment, F. Fairman, Gananoque, \$6.

Best tinsmith's work, an assortment, R. M. Horsey, Kingston, \$6; 2nd do, Chown & Cunningham, do, \$4.

Best tinsmith's lacquered work, an assortment of, Chown & Cunningham, Kingston, \$6; 2nd do, R. M. Horsey, Kingston, \$4.

Stoves.

Best cooking stove, for wood, John McGee, Toronto, \$6; 2nd do, Chown & Cunningham, Kingston, \$4.

Best cooking stove, for coal, J. G. Beard & Son, Toronto, \$6; 3rd do, John McGee, Toronto, \$4.

Best furniture for cooking stove, one set, G. Chown, Kingston, \$4; 2nd do, Chown & Cunningham, do, \$3.

Best hall stove, for wood, J. G. Beard & Son, Toronto, \$5; 2nd do, John McGee, do, \$3.

Best hall stove, for coal, J. G. Beard & Son, Toronto, \$5; 2nd do, John McGee, do, \$3.

Best parlour stove, for wood, J. R. Armstrong, Toronto, \$6 ; 2nd do, J. G. Beard & Son, do, \$3.

Best parlour stove, for coal, John McGee, Toronto, \$5 ; 2nd do, J. G. Beard & Son, do, \$3.

EXTRAS.—Zinc and iron shoe nails, Cowan & Britton, Gananoque, commended; bar iron manufactured from scrap, A. C. Chewett & Co, Kingston, \$4; bar iron from native ore, A. C. Chewett & Co., Kingston, \$4; steel for sleigh shoes, A. C. Chewett & Co., Kingston, \$4; boiler and bridge rivets from scrap iron, A. C. Chewett & Co., Kingston, \$2; set of weights and measures, Hiram Piper, Toronto, \$6; Signal lamp for vessels, Hiram Piper, Toronto, \$4; specimen of electro-plating, Wallace Millichamp, Toronto, \$3; forged work, Thos. L. Wilson, Kingston, diploma and \$6.

CLASS XLVII.—MISCELLANEOUS, INCLUDING POTTERY AND INDIAN WORK.—(64 Entries.)

Judges.—J. F. Wright, J. A. Tarbort, D. McMillan.

Best artificial leg, John Condell, Brockville, \$6.

Best artificial arm, do, do, \$6.

Best brushes, an assortment, Alfred Green, Hamilton, \$6.

Best model of a steam vessel, Richard Osborne, Newburg, \$6.

Best model of a sailing vessel, Andrew Rea, Kingston, \$6 ; 2nd do, James Heasley, Kingston, \$4.

Best stoneware, an assortment, S. Skinner & Co., Hallowell, \$10.

Best slates for roofing, Benjamin Walton, Toronto, \$8.

Best buckskin mittens, one pair, James H. Peck, Albury, \$2 ; 2nd do, Groh & Mayer, Kingston, \$1.

Best mocassins, one pair of plain, Groh & Mayer, Kingston, \$2.

Best mocassins, worked with beads or porcupine quills, one pair, Betsey—Caughnawaga, \$3.

EXTRA ENTRIES.—Garden tiles for walk edges, Bateman Losee, Cobourg, \$4 ; skiff, Marshall Bros., Kingston, diploma ; pleasure boat, M. V. Gorman, Kingston, diploma ; 3 pairs sweep oars and 6 paddles, do, do, diploma ; pleasure skiff, do, do, \$5 ; 3 pairs of spoon-blade oars, diploma ; red brick, D. Campbell, Charlottenburg, \$3 ; row boats, H. Tomlinson, Portsmouth, Diploma ; collection of whisks, J. L. Stranahan, Toronto, \$1 ; 2 watch pockets, (Indian work) Betsey —,

Caughnawaga, \$1 ; pin cushion, do, do, 50c ; smoking cap, Mary —, do, \$1 ; running man target, Martin Scott, Kingston, \$1.

CLASS XLVIII.—MUSICAL INSTRUMENTS—(Entries).

Judges.—John Carter, Toronto ; A. W. Murdock.

Best harmonium, Andrus Brothers, London, \$10.

Best melodeon, R. S. Williams, Toronto, \$6 ; 2nd do, Andrus Brothers, London, \$4.

Best piano, square, J. C. Fox, Kingston, \$15 ;

EXTRA.—Military brass drum, R. S. Williams, Toronto, diploma.

REMARKS.—The judges having examined the several instruments in the Crystal Palace, in addition to the prizes awarded they wish to speak favorably of several instruments (melodeons, organs, &c.) exhibited by D. W. Caldwell, of Kingston, in the Foreign Class. In deciding the prizes for melodeons they hesitated much as to which of the competitors to award the 1st prize, but finding the finish of those by Williams somewhat superior, they agreed to recommend that the 1st prize be awarded him.

CLASS XLIX.—NATURAL HISTORY—(10 Entries.)

Judges.—Professor Lawson, Kingston ; Professor Buckland, Toronto.

Best collection of native insects, classified, and common and technical names attached, R. V. Rogers, Kingston, \$8.

Best collection of minerals of Canada, named and classified, A. T. Drummond, Kingston, \$8.

Best collection of native plants, arranged in their natural families and named, John Macoun, Belleville, \$8 ; 2nd do, Thos. W. Poole, Norwood, \$5 ; 3rd do, John Bell, Kingston, \$3.

Best collection of the woods of Canada, in boards two feet long, one side polished ; also, a portion of the tree cut in sections showing the bark, Nathaniel Leonard, Westbrook, \$8.

EXTRA.—Collection of Canadian shells, A. T. Drummond, Kingston, \$3.

CLASS L.—PAPER, PRINTING, BOOKBINDING AND TYPE—(41 Entries).

Judges.—John Creighton, Kingston ; Wm. Halley, Toronto.

Best book-binding (blank book) assortment of, Thomas McAuley, Kingston, \$5 ; 2nd do, Brown Brothers, Toronto, \$3.

Best book-binding (letter-press, Brown

Brothers, Toronto, \$5; 2nd do, Dredge & Wilson, Toronto, \$3.

Best letter-press printing, plain, Donelly & Lawson, Hamilton, \$5; 2nd do, George Brown, Toronto, \$3.

Best letter-press printing, ornamental, Geo. Brown, Toronto, \$5; 2nd do, W. Lightfoot, Kingston, \$3.

Paper hangings, Canadian paper, one dozen rolls, assorted, W. Robinson, Kingston, \$6; 2nd do, do, do, \$4.

Best papers [printing, writing and wrapping] one ream of each, A. Buntin & Co., Montreal, \$6; 2nd do, Angus and Logan, Montreal, \$4.

Best papers [blotting and coloured] one ream of each, A. Buntin & Co., Montreal, \$6.

Best pocket-books, wallets, &c., an assortment, Brown Brothers, Toronto, \$6.

EXTRAS.—Envelopes, A. Buntin & Co., Montreal, \$1; bill-cases and blotting-cases, Brown Bros., Toronto, \$1; card cases, do, do, \$2; ornamental posters, George Brown, Toronto, \$1; plain cards, do, do, \$1; ornamented do, do, do, \$1; general job printing, do, do, \$2; envelopes, P. B. Martin, Montreal, 50c.

REMARKS.—The Judges regret that no very good specimen of book-printing has been entered for competition, and they think that in future a special prize should be given for book and fine wood-cut printing.

CLASS LI.—SADDLE, ENGINE HOSE, AND TRUNK MAKERS' WORK, AND LEATHER.—(48 Entries.)

Judges.—T. Morrow, and W. Edwards, Toronto.

Best harness, set of double carriage, Marshall Porter, Bowmanville, 2nd prize, \$5.

Best harness, set of single carriage, do, do, 2nd prize, \$4.

Best harness, set of team, do, do, \$5.

Best hames, six pair of wooden team, S. Skinner, Gananoque, \$3.

Leather.

Best belt leather, 30lbs, John Bartle, Chippawa, \$3; 2nd do, S. S. Wartman, Camden, \$2.

Best brown strap and bridle, one side of each, John Billing & Co., Galt, \$3 and Diploma; 2nd do, S. S. Wartman, Camden, \$2.

Best carriage covers, two skins, John Billing & Co, Galt, \$3.

Best deer skins, dressed, Jacob DeWitt, Montreal, \$2.

Best harness leather, two sides, Robert Lingwood, Fergus, \$3; 2nd do, John Billing & Co., Galt, \$2.

Best hogskins, for saddles, three, John Billing & Co., Galt, \$4; 2nd do, Robert Lingwood & Co., Fergus, \$3.

Best skirting for saddles, two sides, John Bartle, Chippawa, \$4; 2nd do, John Billing & Co., Galt, \$3.

EXTRA ENTRIES.—One side black bridle leather, John Billing & Co., Galt, \$2; two sides collar leather, do, do, \$2; two sides of hose leather, do, do, \$2; silver and brass plated harness, S. Skinner, Gananoque, diploma; assorted collection of harness, do, do, \$4; calf kid for shoe work, Jacob DeWitt, Montreal, \$2; calf kid for glove work, do, do, Diploma; white organ leather, do, do, \$3; leather belting in rolls, L. J. Campbell & Co. Montreal, Diploma; carriage and harness, silver plated mountings, Wallace Millichamp, Toronto, Diploma.

REMARKS.—The Judges regret that the competition in this class is so very small. The double and single sets of harness exhibited are not got up in sufficiently good taste to warrant the awarding of first prizes. The six specimens of harness leather exhibited are of very superior quality, and entitled to the highest commendation.

CLASS LII.—SHOE AND BOOT-MAKER'S WORK, LEATHER, &c.—(64 Entries.)

Boots, &c.

Judges.—J. Bain, S. S. Madden, and W. H. Ball.

Best boots, ladies', an assortment, A. Sutherland, Kingston, \$7; 2nd do, W. Allan, Kingston, \$4.

Best boots, gentleman's sewed, assortment, W. Allan, Kingston, \$7; 2nd do, A. Sutherland, Kingston, \$4.

Best boots, pegged, an assortment, A. Sutherland, Kingston, \$5; 2nd do, Kirk and Row, Kingston, \$3.

Boot and shoemakers' lasts and trees, an assortment, M. Selway, Toronto, \$8; 2nd do, James Bullock, Lyn, \$5.

Best shoemakers' pegs, an assortment, W. A. Young, Carlisle, \$4.

Best shoes, India rubber, an assortment, John Billing & Co., Galt, \$6; 2nd do, R. Lingwood, Fergus, \$4.

Leather.

Best calf-skins R. Lingwood, Fergus, \$3; 2nd do, Thomas Fowke, Darlington, \$2.

Best calf-skins, grained, R. Lingwood, Fergus, \$3; 2nd do, Thos. Fowke, Darlington, \$2.

Best calf-skins, two morocco, R. Lingwood,

Fergus, \$3; 2nd do, John Bartle, Chippawa, \$2.

Best cordovan, two skins of, Robert Lingwood, Fergus, \$3; 2nd do, John Billing & Co., Galt, \$2.

Best dog-skins, two dressed, Thos. Fowke, Darlington, \$3.

Best kip-skins, two sides, John Bartle, Chippawa, \$3; 2nd do, Thos. Fowke, Darlington, \$2.

Best kip-skins, grained, Thos. Fowke, Darlington, \$3; 2nd do, John Billing & Co., Galt, \$2.

Best linings, six skins, R. Lingwood, Fergus, second prize, \$2.

Sheep-skins, six coloured, John Billing & Co., Galt, \$3.

Best sole leather, two sides, Robert Lingwood, Fergus, \$3; 2nd do, R. Campbell, Portsmouth \$2.

Best upper leather, two sides, John Bartle, Chippawa, \$3; 2nd do, R. Lingwood, Fergus, \$2.

Best upper leather, grained, two sides, Thos. Fowke, Darlington, \$3; 2nd do, Robert Lingwood, Fergus, \$2.

EXTRAS.—Split leather, John Billing & Co., Galt, \$2; bellows leather, do, do, \$2; card leather, do, do, \$2; waxed grain leather, Robert Lingwood, Fergus, \$1; screw power boot trecing machine, W. A. Young, Carlisle, \$3; double lever boot crimping machine, do, do, \$5; stretching and rubbing down machine, do, do, \$1.50; lever power boot trecing machine, do, do, \$2; Balmoral shoe ops. machine made, G. W. Folts, Toronto, 50c.

CLASS LIII.—WOOLLEN, FLAX, AND COTTON GOODS; AND FURS AND WEARING APPAREL—(175 Entries).

Judges.—G. W. Weaver, Montreal, and H. M. Melville, Hamilton.

Best bags, from flax or hemp, the growth of Canada one dozen, Robert Denison, Napanee, \$5; 2nd do, D. Campbell, Charlottenburg, \$4.

Best blankets, woollen, one pair, Daniel Campbell, Charlottenburg, \$6; 2nd do, Mrs. Anne J. Waldron, Storrington, \$4.

Best carpet, woollen, one piece, E. Snider, Elizabethtown, \$8; 2nd do, N. Dollar, N. Fredericksburg, \$5.

Best carpet, woollen stair, one piece, E. Snider, Elizabethtown, \$6; 2nd do, C. A. Henderson, Brockville, \$4.

Best cassimere cloth, from merino wool, one piece, J. N. Pius, Port Dover, \$6; 2nd do, Platt Hinman, Grafton, \$4.

Best cloth, fulled, one piece, B. M. Clark, Ernestown, \$6; 2nd do, R. Williams, Switzerville, \$4.

Best counterpanes, two, Mrs. A. J. Waldron, Storrington, \$5; 2nd do, Miss Catherine Harker, Kingston, \$3.

Best check for horse collar, one piece, N. Leonard, Westbrooke, \$4; 2nd do, C. A. Henderson, Brockville, \$3.

Best drawers, factory made, woollen, one pair, T. Wilson, Kingston, \$4.

Best flannel, factory made, one piece, Hiram Tubbs, Hallowell, \$5.

Best flannel, not factory made, one piece, D. Campbell, Charlottenburg, \$5; 2nd do, W. Tubbs, Picton, \$3.

Best fur cap and gloves, C. Wright, Kingston, \$4; 2nd do, Groh & Meyer, Kingston, \$3.

Best fur sleigh robes, buffalo, wolf and raccoon, (an assortment), J. A. McDowell, Kingston, \$5; 2nd do, C. Wright, Kingston, \$3.

Best gloves and mits of any leather (an assortment), J. Dewitt, Montreal, \$4; 2nd do, Groh and Meyer, Kingston, \$3.

Best horse blankets, two pair, Robt. Denison, Napanee, \$5; 2nd do, W. S. Guess, Loughboro, \$3.

Best Kersey for horse clothing, one piece, N. Leonard, Westbrook, \$5; 2nd do, R. Denison, Richmond, \$3.

Best linen goods, one piece; Dan. Campbell, Charlottenburg, \$5; 2nd do, Daniel Campbell, Charlottenburg, \$3.

Best overcoat of Canadian Cloth, John Kinnear, Kingston, \$4; 2nd do, Joseph Brown, Camden, \$3.

Best satinnet, black, one piece, R. Williams, Switzerville, \$6.

Best satinnet, mixed, one piece, R. Williams, Switzerville, \$5.

Best silk and felt hats, Clark Wright, Kingston, \$5; 2nd do, D. Chisachi, Kingston, \$3.

Best suit of clothes, of Canadian cloth, J. Kinnear, Kingston, \$8.

Best tweed, winter, one piece, John Pitts, Port Dover, \$6.

Best tweed, summer, one piece, J. N. Pitts, Port Dover, \$6.

Best woollen cloths, tweeds, &c., an assortment, J. N. Pitts, Port Dover, \$10.

Best woollen shawls, stockings, drawers, shirts, and mits, an assortment, E. Snider, Elizabethtown, \$10.

Best yarn, white and dyed, one pound of

each, Thos. Wilson, Kingston, \$2; 2nd do, E. Jackson, Kingston, \$1.

Best yarn, fleecy woollen, for knitting, one pound, Mrs. T. Wilson, Kingston, \$2; 2nd do, Mrs. Chas. Bellwood, Clark, \$1.

Best yarn, cotton, two pounds, D. Campbell, Charlottentown, Glengarry, \$2.

EXTRA ENTRIES—Rag carpeting, N. Dollar, Fredericksburg, \$3; assortment of furs, mocassins, &c., James McDowell, Kingston, \$5; do do, Clark Wright, Kingston, \$5; linen drapery, D. Campbell, Charlottentown, \$5; assortment of dressed furs and ladies' furs, Groh & Meyer, Kingston, \$12; flannels, Mrs. L. Brown, Camden, \$3; ladies' and gentlemen's furs, D. Chisachi, Kingston, \$8; fancy carriage robe, Mrs. T. Wilson, Kingston, \$3; gentleman's plaid, D. Campbell, Glengarry, \$1; suit of Persian lamb skin fur, J. McDowell, Kingston, highly commended, \$4.

CLASS LIV.—FOREIGN MANUFACTURES.—
(20 Entries.)

Judges.—J. E. Pell, Montreal, and W. H. Sheppard, Toronto.

Family sewing machine, C. W. Williams & Co., Boston, commended.

Stonepaper for roofing, manufactured in Prussia, W. Wagner, Montreal, Diploma.

Cottage organ, Jacob Esta, Vermont, Harmonic organ, do, do, Double Harmonic melodeon, do, do, Single do, do, Harmonic Aeolian, do, do, Square piano, do, do, all exhibited by D. W. Caldwell, agent, Kingston, highly commended, Diploma.

Illuminated book-makers, woven in silk, Thomas Stevens, Coventry, England, Commended.

Cutlery, Buton and Milliner, Rochester, Diploma.

Assortment of flint glass, E. D. Dethridge, Pittsburgh, commended.

Sewing machine, G. W. Folts, Toronto, commended.

One 7-octave piano, Stodart & Morris, New York, exhibited by B. A. McDonald, agent, Toronto, Diploma.

Publications of the British & Foreign Bible Society, exhibited by E. Stacy, agent, Kingston, commended.

Miscellaneous.

PULVERIZATION OF MANURE.

There is no doubt that the pulverization of manure is important in reference to deriving the greatest benefit from it in nourishing plants.

A late number of the *Country Gentleman* gives the following practical remarks on this subject:

After the manure is spread over the soil, and before ploughing in, great benefit is derived by thorough harrowing with the top soil, thus breaking finely both the manure and the soil, and mixing them well together.

Another way for the perfect diffusion of the manure among the particles of earth, is to spread the manure in autumn, so that all the rains of the season may dissolve the soluble portions and carry them down among the particles, where they are absorbed and retained for the growing crop.

In experiments which we have witnessed, where the manure for the corn was first applied in autumn, it has afforded a yield of about seventy bushels per acre, when the same amount applied in spring gave only fifty bushels. A thin coating of manure applied to winter wheat at the time of sowing, and well harrowed in, has increased the crop from seven to ten bushels per acre—and in addition to this, by the stronger growth it has caused, as well as by the protection it affords the surface, it has not unfrequently saved the crop from total or partial winter killing.

In cases where it is necessary to apply coarse manure at once, much may be done in lessening the evils of coarseness by artificially grinding it into the soil. The instrument called the drag-roller—which is like the common roller set stiff, so as not to revolve—has been used to great advantage for this purpose, by passing it over the surface in connection with the harrow. We have known this treatment to effect a thorough intermixture, and to more than double the crop obtained by common management with coarse manure.

FORESTS A NECESSITY OF FERTILITY.—The value of forests to a country in retaining moisture is well illustrated by the late severe freshets of the Connecticut valley. The snow melts quicker in an open country, and is retained longer among groves. Formerly the Connecticut river and its tributaries were clothed with forests; now they are largely denuded, and we have reason to expect greater freshets than formerly.—The present barrenness of Greece and Palestine as contrasted with their former fertility, is similarly accounted for.—Dr. Unger, a celebrated naturalist of Vienna, claims that the climate lacks its original moisture. He says the hordes of warriors who have followed each other for centuries on that soil, have burned up the forests, and every effort of nature to make restoration is subdued by a superabundance of goats. The population live on the products of the goats, and the goats crop every twig, thus bringing barrenness. If the forests should ever again grow, Dr. Unger thinks fertility would be restored.

Editorial Notices, &c.

BRITISH AMERICAN MAGAZINE, No. 7, November, Rolio & Adam, 1863.

This is a capital number, commencing the second volume of this popular native serial, which we are happy to learn is steadily increasing in circulation. It being essentially a Canadian production, made up of original papers relating to our vast natural, and, as yet, undeveloped resources, and of entertaining tales, of a correct moral tone, cannot fail to exercise a healthy influence on the social condition of these North American Provinces. The article from the prolific pen of the Editor on the "Political and Commercial Importance of the Fisheries of the Gulf of St. Lawrence, Labrador and Newfoundland, demands in particular the attention of our Statesmen, and will be found of great interest to the general reader. We regret that want of space will not allow the transference of the article on "Our Country Homes,—their Rural Aspect," to our pages. It evinces correct taste and a practical acquaintance with Canadian wants and shortcomings, in matters of rural comfort and picturesque advancement, and we feel particularly interested in the article as emanating from the pen of a *Canadian Farmer*. The space devoted to the Reviews and critical notices of books in this Magazine will be found highly interesting and of no small practical value to a numerous class of readers, especially those who live in the country, as a sort of guide in making a judicious selection, and in keeping them up to some extent, with the progress of British and American literature. The twelve numbers of this valuable periodical form two handsome volumes a year, for the moderate charge of three dollars.

OUTLINES OF THE STRUCTURE AND PHYSIOLOGY OF THE ANIMALS OF THE FARM, FOR AGRICULTURAL STUDENTS AND FARMERS, by John F. Hodges, M.D., F.C.S. Professor of Agriculture and Medical Jurisprudence in the Queen's University, Ireland. London: Longman & Co., 1862.

We have to thank the Author for a copy of this little work, which like its predecessors from the same able pen, "Lessons on Chemistry and its application to Agriculture," and "First Steps to Chemistry," is admirably adapted to

the wants of farmers everywhere. Professor Hodges is something more than a chemist. He writes with a correct and extensive knowledge of science, and a considerable acquaintance with the practice of agriculture, having for many years filled the office of Secretary to the Chemico-Agricultural Society of Ulster, and the Chair of Agriculture in the Queen's College, at Belfast. The little work before us contains the substance of the lectures which the Professor has been in the practice of giving from his own chair, and also to the students of the Royal Albert Institution at Glasnevin, near Dublin, as well as to Farmers' Clubs, &c.

The reader will form a pretty full idea of the scope of this work from the following condensed statement of its contents: Introductory; Classification of the Animal Kingdom; The Blood; The Organs of Digestion; Circulation of the Blood; The Bile, &c.; How the Blood is Purified; Respiration; The Solid Framework of the Animal; The Skin, Hair and Wool; Composition and Adulteration of Milk. All the above subjects are treated in a very familiar manner, without the least sacrifice of scientific accuracy, and the accompanying wood cuts will very much assist the reader in more readily and perfectly comprehending the meaning of the text. We would like to see this, and the other works of Dr. Hodges above mentioned, introduced into the Schools of Canada: as lesson or text books they are in every way suitable to the most urgent wants of an agricultural community.

THE PRACTICAL SHEPHERD: By H.S. Randall, LL.D. Philadelphia: J. P. Lippincott & Co.; Rochester, N.Y.: D. D. Moore, 1863.

We have to thank the author for a copy of the above very complete Treatise on the History, Breeds and Management of Sheep. Dr. Randall is a gentleman favourably known for two little excellent works, published some time since, on "Sheep Husbandry in the South," and "Fine Wool Sheep Husbandry." The "*Practical Shepherd*," however, contains, in addition to the pith of these publications, the author's matured opinions and experience, bringing up the subject to the present state of knowledge, and the most approved systems of management, not only of fine but of coarse woolled sheep of all breeds. We observe that special mention is made of the Canadian breed-

ers, Messrs. Stone, Miller, &c., with cuts of some of their characteristic animals. The work is exceedingly well printed, and illustrated on good paper, and the "getting up" is highly creditable to the establishment of Mr. D. D. Moore, of the *Rural New Yorker*. As sheep husbandry is daily acquiring more importance in Canada, we can safely recommend to our farmers "THE PRACTICAL SHEPHERD," as the most comprehensive and valuable treatise on this subject that has as yet emanated from the American press. The price is not stated, but we presume it is about a dollar. Every farmer having a flock of sheep, of whatever breed and however small, would do well to procure a copy. Mr. Fleming, Seedsman, Toronto, has a few copies of this work on hand.

BLACKWOOD'S Edinburgh Magazine; October 1863; New York: Leonard, Scott & Co.

This old serial the longer it lives seems to increase in the vivacity and attractiveness of its articles. The present number contains the conclusion of *Cantoniana*; *Sheridan Knowles*; *To-day in Italy*; *Harron School*; *Chronicles of Carlingford*; *Amen!*—in the Cathedral of *St. Andrews*; *Gold and Social Politics*.

TORONTO MARKET PRICES.

TORONTO, NOVEMBER 21, 1863.

Fall Wheat, per bushel.....	\$0 80 to \$1 05
Spring Wheat, ".....	78 " 82
Barley, ".....	76 " 86
Peas, ".....	45 " 50
Oats, ".....	42 " 44
Rye, ".....	56 " 60
Beef, ".....	3 00 " 4 50
Potatoes, per bushel.....	35 " 45
Flour, No. 1 to Extra.....	3 80 " 4 50
Turnips.....	12 " 15
Carrots.....	20 " 25
Pork, per 100 lbs.....	4 50 " 5 00
Geese, each.....	37 " 50
Ducks, per pair.....	35 " 40
Turkeys, each.....	75 " 1 00
Apples.....	1 50 " 2 50
Fresh Butter, per lb.,.....	18 " 20
Eggs, per doz.....	15 " 23
Chickens.....	30 " 35
Calves, each.....	4 00 " 6 00
Sheep, each.....	3 75 " 4 50
Hay, per ton.....	10 00 " 12 00
Straw, ".....	6 00 " 7 00
Hides, per 100 lbs.....	5 00 " 5 50
Calf-skins, per lb.....	8 " 9
Sheep Skins.....	80 " 1 25
Wool, per lb.....	40 " 43
Plaster of Paris, per barrel ..	95 " 1 00
	1 80 " 1 87

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In sums of \$250, \$500, and upwards, in
FARMING PROPERTY.
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Wanted some Good Farms, and Wild Lands,
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THE following testimony is from an extensive
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DEAR SIR,—I have used Coe's Super-phosphate of Lime for several years past with uniform success, and last season it proved particularly satisfactory. Ten acres of land which was of more than an ordinary poor quality was treated in the following manner:—On one half the piece I used Coe's Super-phosphate, at the rate of 200 lbs. to the acre; on the other half Peruvian Guano at the same rate, and sowed with wheat. On the five acres on which I used Phosphate, I had at least twenty-five per cent. more wheat, and the berry was much larger and of nicer quality than where the Guano was used, and also the straw was much the heaviest where the Phosphate was used. I have used Coe's Phosphate in different ways, and on different crops, and the results have been highly satisfactory.

Very truly yours,
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MORETON DUKE, got by Mr. Stone's Bull
3rd Grand Duke, 2292, calved 9th June,
1860.

William of Oxford, got by Mr. Stone's Bull
12th Duke of Oxford, calved 19th November
1859.

David, got by Sir Charles, a son of 3rd Grand
Duke, calved 1st March 1861.

Marquis of Oxford, got by William of Oxford,
calved 20th March 1863.

Warwick, got by Moreton Duke, calved 26th
March 1863.

Terms very reasonable.

W. WILCOCKS BALDWIN.

Larchmere, Oak Ridges.

April, 1863.

tf.

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" " " No. 6..... 16.50 "

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Draining Tools of Superior Quality, Spades,

Shovels, Manure Forks, Potato Forks, Hay

Forks, Cradles, Scythes, Snaiths, Iron Rakes,

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JAMES FLEMING & Co.

TORONTO, Dec. 16th, 1862.

Miscellaneous Articles.

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Rustic Iron Garden Chairs, Plain and Ornamented Flower Pots, Vases, Propagating-Glasses, Fish Globes, Aquariums, Green-house Syringes, Conservatory Pumps, Water-pots with patent brass roses, Fumigators, Saynor's celebrated Pruning and Budding Knives, Bass Mats, Hedge Shears, Transplanting Trowels, Grass Shears with long handles, Thistle Spuds, Fancy Rakes and Hoes, Hatchets, Hammers, Sets of Garden Tools for Boys, Large Pruning Shears, Garden Lines and Reels, Gardener's Gloves, &c., &c., &c.

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THE CANADIAN AGRICULTURIST

AND JOURNAL OF THE

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OF UPPER CANADA.

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All orders to be addressed to the Secretary of the Board of Agriculture, Toronto.

The back numbers of the present volume can still be supplied at the above rates.

Orders for the half volume, commencing 1st July, taken at 25 cts. per copy; discount for a number of copies in same proportion as above.

AGRICULTURIST OFFICE.

Toronto, June, 1863. }

[POST FREE.]

THE
Canadian Agriculturist
AND
JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV. TORONTO, DECEMBER, 1863. No. 12.

A PARTING ADDRESS.

It has become the task of the Editors to announce that the present number of the *Agriculturist* will close the series published under the direction of the Board of Agriculture of Upper Canada. When the Board assumed the responsibility of the publication, now some six years ago, it did so for the purpose of occupying a field which otherwise appeared likely to be left vacant. It is true that several excellent Agricultural periodicals, published in the adjoining States, had a considerable circulation in this Province, and doubtless conveyed much useful and interesting knowledge to their readers; but the *Agriculturist* was the only purely Agricultural Journal published in Upper Canada, specially designed for, and edited with a view to the wants of the Canadian farmer. But, from various causes, chief amongst which was the want of adequate support, the publication of the Journal by individual enterprise appeared likely to cease. The Board therefore believed that they should be doing good service to the cause of Agricultural progress in the Province by acquiring the right to continue the publication under their own control; especially as it was necessary that they should be possessed of some medium for communicating official and other information direct to the farmers and Agricultural Societies of the country.

The Editors have done their best to carry out the intentions of the Board, but, labouring under the disadvantage of having their time greatly occupied with other matters, and receiving little

extraneous assistance, they have felt that they could not, at all times, do that justice to the task which they could have wished. Besides, from not having the facilities of a printing office of its own at command, to ensure prompt and satisfactory execution of the mechanical work of getting out the numbers, and, from its official position, not being well able to avail itself of those resources of advertizing and canvassing which are at the command of private enterprise, the Board has not been able to obtain that wide distribution for the *Agriculturist* which was desirable. Still, notwithstanding these drawbacks, the Editors believe that their efforts have not been unattended with some good results.—Much sound and valuable information has been culled from various sources, and diffused throughout the country. The circulation of the Journal has steadily, although slowly, increased. A wider interest in the truths of Agricultural Science has been gradually awakened; and contributions to the pages of the Journal from the hands of the farmers themselves, which were at first few indeed and far between, have become of late more frequent and valuable. Progress has been slow, but on the whole not discouraging; and, had the Board been called upon to continue the publication, with the improvements which would from time to time have been effected, it would eventually, the Editors believe, have attained to the exercise of a widely extended and useful influence.

But an enterprising and well known publisher of this city, the Hon. G. Brown, who is besides

very extensively engaged in Agricultural pursuits himself, having lately announced his intention of publishing a semi-monthly journal in the exclusive interests of Agriculture, the Board feel that they are thereby relieved from the task which they had assumed. Mr. Brown has facilities at his command which will enable him to do full justice to his undertaking. We believe that he will pursue this undertaking earnestly and energetically. The Board therefore have relinquished the right of publishing the *Agriculturist*, in his favor, and this journal will henceforth cease to appear. But the Board will not in consequence be left without a medium for communicating with the farmers and Agricultural Societies of the Province. By arrangements made with Mr. Brown, the pages of the new paper will be open to them, and will meet the necessities of the Board in this respect quite as well as a journal published under their own direct supervision. Besides, the new arrangement will, by affording him more time, enable the Secretary to prepare an Official Report *annually*, embodying all that is important and interesting in the Reports furnished the Board by the Agricultural Societies of the Western Section of the Province. The completion of another volume of Transactions will now be proceeded with, without further delay.

The new Agricultural paper will be published under the name of "THE CANADA FARMER." We refer to the Prospectus in another column, and bespeak for it a hearty support on the part of the farmers of the country at large. We trust that those steady friends, who have hitherto given their valuable support to our humble efforts in the *Agriculturist*, will not fail to exert their influence in favor of our successor.

As we have good evidence for believing, from arrangements already completed or in progress, that no pains or expense will be spared by the enterprising proprietor of the "THE CANADA FARMER" to make that journal inferior to none of its class on the continent, we trust that not only will all our subscribers transfer their names to the new list, but that sufficient encouragement will be given in all parts of the Province to place this important undertaking on a permanent basis.

In conclusion we cannot help saying that we do not part with our readers and contributors, who have accompanied us so long, without a

feeling of regret; and we cheerfully embrace this opportunity of thanking them for their generous confidence and support. We desire to associate the bidding of them farewell with similar wishes of a **HAPPY NEW YEAR.**

THE "CANADA FARMER."

From the spirited manner in which this new Agricultural Journal has been commenced we are persuaded that we may confidently recommend all our friends to give it their support. The publisher has facilities for conducting it with efficiency not possessed probably by any other establishment in Canada; and it cannot be without advantage to have Mr. Brown's well known energy fully enlisted in the cause of Agriculture.

Preparations have been already made for getting out the Farmer in the best style. It is to be printed on fine paper from a new font of type, and a full staff of Editors, Reporters, Artists, and Wood cutters has been retained. Mr. W. F. Clark, a well known and able Canadian writer, is to be Editor in chief. Mr. Beadle of St. Catharines is to take charge of the Horticultural department, and prominent professional agriculturists are to contribute to the Live stock, Chemistry and Veterinary departments. We hear that the first number is to be illustrated with drawings of some of the leading prize animals at the late Provincial Show. We fully expect that the new paper will be worthy of hearty support; it is the only agricultural Journal now published in Upper Canada; and it ought to receive a hearty welcome from all who are interested in the Agricultural progress of our Country.

AGRICULTURAL SOCIETIES.—THE ANNUAL MEETINGS.

The Township Agricultural Societies hold their Annual Meetings all over the Province in the second week, and the County Societies in the third week of January. At the township meetings the chief business consists in receiving and adopting (if approved of) the report of proceedings for the past year prepared by the Directors, and electing the officers, viz: a President, Vice-President, Secretary and Treasurer, and not fewer than three, nor

more than nine Directors, for the ensuing year. We desire to impress upon the officers of Agricultural Societies, especially upon those who may happen to be new to the work, the importance of having these reports correctly and properly prepared. Each report should contain a list of the members of the Society who have paid their subscriptions for the past year, and the amount paid by each, a list of the prizes awarded at each exhibition held by the Society, with the names of the parties to whom, and the articles for which such prizes were awarded; a correct statement of the receipts and expenditure of the Society, showing the sources from which the income has been

derived, and the objects upon which the expenditure has been made. The law requires a "detailed" statement of such receipts and expenditure, but this does not ordinarily involve a great amount of labor, as in most cases the prizes paid constitute the main bulk of the items of expenditure, and they are embodied in the "prize list" as a necessary part of the report. Besides the detailed statement however, there ought to be given, for convenience of reference, a summary statement or balance sheet in a condensed form. We submit the following as a simple form of such balance sheet, being in fact the form more or less closely used in the majority of cases already:

Treasurer, in account with ——— Agricultural Society.

DR.	\$	cts.	CR.	\$	cts.
To balance from last year	—	—	By amount paid for premiums	—	—
To Members' subscriptions	—	—	By expenses of preparations for exhibition, printing, &c.	—	—
To Government Grant	—	—	By paid for other objects	—	—
To receipts from other sources	—	—	By balance in hand.	—	—
	\$			\$	

It would be well also in all cases where it can be done, to give an additional balance sheet

showing the exact present position of the Society in somewhat the following form:—

Statement of the Liabilities and Assets of the ——— Agricultural Society.

LIABILITIES.

ASSETS.

	\$	cts.		\$	cts.
Due on Premiums awarded and not paid	—	—	Subscriptions due and unpaid	—	—
Due for work on (or purchase of) show grounds and buildings	—	—	Real property belonging to Society	—	—
Due on Stock belonging to Society	—	—	Live Stock belonging to Society	—	—
Due on other accounts	—	—	Other property	—	—
Total liabilities	\$		Total Assets	\$	

Besides the information above mentioned the Report should embody "such remarks and suggestions upon the Agriculture and Horticulture of the township, and Arts and Manufactures therein, as the Directors are enabled to offer." There should be also appended to the Report the names and Post Office address of the officers and directors elected for the ensuing year. This is very necessary for the purpose of affording the Board of Agriculture the means of communicating readily with the Society when re-

quisite. The Report, when adopted by the Society, should be immediately entered in the Society's Journal or Minute Book, and a correct copy, certified by the President or Vice-President, transmitted to the Secretary of the County Society, in time for the annual meeting of the latter in the following, *i. e.*, the third, week of the month of January.

The business at the annual meetings of the County, or Electoral Division Societies, is nearly similar to that at those of the townships. The

Reports from the township societies have to be received, and a Report, similar to those already described for the townships, and containing information under the same heads, submitted by the Directors. The officers to be elected by the County Society are a President, two Vice-Presidents, a Secretary and Treasurer, and not more than seven Directors. The Report, when adopted, should be entered in the Society's Journal, and a true copy, certified by the President or Vice-President, forwarded to the Board of Agriculture, at Toronto, as soon as possible, but in any event not later than 1st April following. The names of the Officers and Directors elected for the current year should be appended to the Report, and the Reports received from the Township Societies must be transmitted to the Board of Agriculture by the County Society along with their own.

It is also the duty of the County Society at its annual meeting to nominate four persons to serve as members of the Board of Agriculture for the ensuing two years in place of those retiring by rotation. The four members who retire from the Board at the end of the present year are Messrs E. W. Thomson, of Toronto; Hon. H. Ruttan, Cobourg; Hon. G. Alexander, Woodstock; R. L. Denison, Toronto. The retirement of these gentlemen, however, does not render them ineligible for re-election.

The names of the four persons so nominated by the County Society, are required by the Act to be immediately transmitted to the *Bureau* of Agriculture, at Quebec.

A CANADIAN SHORT HORN HERD BOOK.

The Board of Agriculture proposes to publish at an early day, a Herd Book, containing the pedigrees of all the pure blooded Short Horned, or Durham Cattle, which have been imported into, or bred in Canada up to the present time, so far as they can be obtained. It is intended to make the work a complete Book of Reference for Canadian Breeders, affording all the information necessary in reference to the derivation of their stock, without the necessity of consulting either the English or American Herd Books. Every Short Horn Breeder knows the importance and value of such a work, and it is not necessary therefore in this place to dilate

upon it. The Canada Short Horn Herd Book will afford in one compact work, up to the present time, so far as Canadian Breeders are concerned, all the information which is now spread over twenty large volumes of the American and English Herd Books, and which could not be procured in this extended form at a cost of less than a hundred dollars. It is intended that the price of the Canada Herd Book shall be moderate, probably not over three or four dollars per copy. There is already material on hand for a considerable volume, and further pedigrees will be received up to the 1st May next.

Persons wishing to have the pedigrees of their cattle inserted should forward them at once to the Secretary of the Board of Agriculture, Toronto. Each pedigree should be written out in full, and should give the following information, viz: The sex of the animal, the name, the colour, the exact date of birth, the name of the breeder, and of the present owner, the name of the sire of the animal, with his reference number in the Herd Book, or Canada Stock Register; then the name of the animal's dam, and of her sire, with his reference number; the name of the animal's grand dam, and of her sire with his number; and so on, tracing back in a direct line through the female side, for at least five generations, or till the pedigree terminates in a dam already recorded in the Herd Book. If any of the sires mentioned are not Herd Book animals, the full pedigrees of such sires must be given, and they will appear in the Herd Book in their proper places, for convenience of reference, as independent entries.

All pedigrees, the insertion of which has been paid for in the Upper Canada Stock Register, kept at the office of the Board of Agriculture, Toronto, will be inserted in the Herd Book without further charge. The charge for the insertion of others will be half a dollar each.

As the number of copies printed will depend upon the extent of the demand for the work, all persons who wish to have copies are requested to inform the Secretary of the Board of Agriculture as soon as possible, so that their orders can be filed, and the extent of the edition regulated accordingly. The amount need not be forwarded till the work is ready for delivery.—Every County and Township Agricultural Society in the Province, will sooner or later find it

indispensable to be possessed of at least one copy for reference. Such Societies are therefore requested to take the subject into consideration on the first convenient occasion, and if they desire to secure a copy, inform the Secretary of the Board to that effect as soon as possible.

LECTURES ON AGRICULTURE AND THE VETERINARY ART

This Course, under the auspices of the Board of Agriculture and University College, will commence January 21st, 1864, and will be completed in four or five weeks. The subjects embraced will be the leading facts and doctrines of Chemistry, Geology, Botany and Meteorology, in their relation to the Science and practice of Agriculture, in which Prof. Buckland will receive important assistance from the respective Professors of these departments of science in the Provincial University. Mr. Smith, the able Veterinary Surgeon to the Board of Agriculture, will treat on the anatomy, physiology, and diseases of farm animals, and give practical instructions in dissecting.

This course, like that of last winter, will be specially adapted to the wants of young men practically engaged in the work of the farm, with a view of eliciting a spirit of enquiry, and the love of knowledge, in relation to their every day pursuits: a principal object being to put them in a way of observing and studying for themselves.

The course will be open to all, free of charge; so that the only expense, except for a few text works, would be board and lodging for a few weeks. Further particulars may be obtained by addressing Professor Buckland, University College, Toronto.

"THE AGRICULTURIST."

FARMERS WRITE!—THE AGRICULTURIST AND ITS EDITORS—HOW TO IMPROVE IT—USE AND VALUE OF SUCH A JOURNAL—STONES, SNELLS, NIMMOS, MILLERS AND OTHERS.

We purpose, time and opportunity permitting to have a little talk with the *Agriculturist* and its readers. Short letters are the best for such a journal, but if there is much to say, as it issues but once a month, it will take some time to complete the task. We will not therefore lecture upon it, but trust a few words will not

be amiss. The position of the *Agriculturist*, being also the Journal of the Board of Agriculture of Upper Canada, renders it most desirable that it should be in the hands of all the intelligent farmers of the country, but we are afraid that too many take but little interest in it. We have examples in the *Country Gentleman* and *Albany Cultivator*, and the *Genesee Farmer* of very successful and widely read periodicals, attracting much attention in Canada. It cannot be said that our Canadian periodical has not on its pages a staff of able and responsible editors, and we therefore enquire what is the matter? Every reader of the American papers referred to knows that one of their leading features consists in the contributions by farmers themselves from all over the United States; illustrating their occupation; giving their experience; making and answering inquiries; criticising and commenting on the various practices of each other; enjoying communications; establishing acquaintance; creating interest in each others welfare, and prompting good feeling and the progress of this great leading branch of industry. Their journals are a ready source of correspondence between the leading farmers of the country, who comprehend that nothing is lost by imparting to others valuable knowledge derived from experience. There is much no doubt that is crude thrown together in this way, but the result is a great deal that is valuable and instructive.

The want of this is a leading defect in our *Agriculturist*. But whose fault is it? Prof. Buckland and others assure us, that means have been taken, circulars written; correspondence solicited, with a view of changing this, but without effect. Our farmers will not write to each other through the journal. They leave it in the hands of the Toronto editors, one of them a Professor, another Secretary to the Board, a third is Consulting Surgeon and a Licentiate of the Edinburgh Veterinary College. Very well. Other means must be taken.

We suggest that the Board offer premiums for short essays on subjects suggested by themselves. Try a little competition. If this will not do, or at the same time, stir up our Stones, Snells, Nimmos, Millers, and others—drop the great meed of praise showered upon them—put in a little criticism—assail the Durhams—pitch into the Galloways—tell them their Leicesters and Cotswolds, or their Durhams and Ayrshires are too fat or too lean, overfed or too high priced. Do something to set them in motion with their pens, and we shall soon see more readers of the *Agriculturist*.

One of your editors lately went abroad—and he went east, and he gives us a few notes of his trip, and he saw beautiful things of course. The Bay of Quinte was picturesque—Amherst Island a magnificent property—Prince Edward afforded varied and pretty scenery—fine hops turned up in view—Brighton and Cobourg and his hospitable friend the Hon. H. Ruttan came

in for a notice, as did also the garden of Asa A. Burham. Leaving these gentlemen and nice things, the Editor fell among farmers and gives us an account of an agreeable day with Mr. Hume on the north ground. He stopped a short time with the Wrights, Roddicks, Alcorns and others, not to forget a well known name, Mr. John Wade,—then the rail ran away with him to Toronto; aye into Toronto, among the Professors, Presidents of Boards, Lawyers, and other professional men, among the busy merchants, and the great conglomeration of the western metropolis. Well, will not the readers of the *Agriculturist* say they were glad the Editor took his little trip and penned his scattered and hurried notes, and that they were interesting to read? Would not more trips and more notes of intelligent farmers and of their doings be desirable? Would they not add to the interest of the only farmers' journal we have? To be sure they would. But what the Editor did can be well done by parties in different localities, better acquainted with what is going on; having more time, and by short pertinent letters. More knowledge of our country—of its intelligent farmers—of their experiences—are wanted, and there is no better medium of circulating it than the journal.

The Agricultural Association has brought many farming men into notice, and aided them in improving their business, and incited them to expend their means in introducing improved breeds of cattle, sheep, and horses. It has helped the Canadian manufacturer of implements and introduced a great many improved processes to the agriculturist. It has dipped into the arts; aided the horticulturist, and others, and created a demand for chrysal palaces, and pushed on for large and extensive industrial exhibitions, partaking as we think latterly of an element not uncommon in Canada, and which may be described as one that has ideas too large and goes too fast for its means, and which may result in difficulty and some disappointment. But of all this again. We must confine this present talk to that of the agriculturist—to a small attempt to draw the attention of its readers to a plain duty, that of writing for it—to pointing out to the intelligent farmer that it is a means of monthly correspondence with his brethren, as anxious to hear from him as he can be from them—to the fact that he can make it a means of imparting and receiving information—a great medium for strengthening the agricultural interest of the country.

W. O. BUELL.

Perth, 13th. Oct., 1863.

P.S.—We sent you a notice of Mr. J. McIlquham's farm steading—we have our Wises, Moirerwells, Spaldings, Bells, McDonalds, Camerons, McMurrays, Nicols, Stewarts, McLarens, Clarks, McIntyres, Campbells, Dodds, Harts, Meehans, and lots of other improving farmers, whom we wish to see earnest readers of your journal, who may be included in future notices. But we wish

to see an example set by the leading exhibitors at our provincial exhibitions writing for you. If they will not, we cannot then let them know what good friends they have in this quarter, and that this hitherto quiet snow locked region of the land, has its eyes on their western neighbours, and that they must not hope to carry off all the premiums and all the shows, and all the Crystal Palaces, and all the Officers of the Board of Agriculture west. With the help of friends we have a Glengarry Vice President, and know who were for, and who against us, and how better to appreciate the action of the delegates and of the Board in time to come.

THE VETERINARY ART IN RELATION TO AGRICULTURE.

Professor Brown, late of Cirencester College, opened the winter series of discussions at the London or Central Farmers' Club, by a lecture on the above subject. We take the report as abridged and commented on in the last number of the "*Irish Farmers' Gazette*," and which will be found particularly interesting and instructive to many of our readers, who will not fail to observe from a notice in another part of our present number, that the Board of Agriculture have made provision for systematic instruction in the Veterinary art, under the superintendence of Mr. Smith. After tracing the progress and relation of Agriculture and the Veterinary Art, Prof. Brown observed:—

"As civilization advances the two things become distinct. The Veterinary art, no longer in the hands of the farmer, became the property of the ignorant and the uneducated, so that the name of horse-doctor was an opprobrium. Thus we might trace its struggles through various stages of existence, up to the present century, when it took its place as a distinct profession, with its schools and colleges, enlisting among its members men of education, and ranking fairly as one of the liberal professions."

Professor Brown went on to say, that notwithstanding the position of veterinary science at the present time, it is a melancholy fact that an immense number of animals die yearly from diseases which veterinarians seem powerless to remedy; and he attributed this, not to any deficiency in veterinary science, but to the fact "that agriculture has not availed itself to the extent it might have done of the improvements in the veterinary art." The country is full of uneducated, unqualified practitioners, while educated men are comparatively few in number; and thus a large amount of mischief is done, and the mortality among stock very materially increased. In

connection with this point, the Professor made the following observations:—

"I am free to admit that the ravages of epizootic diseases are altogether irremediable by medical treatment. Beyond all question, the attacks of such maladies as pleuro-pneumonia and small-pox in sheep are beyond the reach of the veterinary practitioner. Science has not discovered a remedy for either of them; but under a properly regulated system they could never have done the mischief in the country that they have. For example, a certified inspector is sent for to inspect a farm. The tale has gone forth that pleuro-pneumonia is there. Thinking calmly on the matter, one is often tempted to smile on the whole affair. Reports go forth that on a certain farm pleuro-pneumonia has appeared, and that by well-directed efforts on the part of the owner its ravages have been stopped. Gentlemen, such a thing has never happened yet. I have myself been called in, in some of these supposed cases of pleuro-pneumonia. After walking among the stock, I have said to the owner, 'I do not discover any signs of the disease. On what is your opinion founded?' The reply has been, 'These animals showed certain symptoms; we treated them in a certain way, and the disease stopped.' I have inspected the remains of animals that have died, and found nothing of the disease. In one case a gentleman had been induced to fumigate his sheds with vapour of tar, or something of that kind, as a specific for the malady, and he told me that by so doing he had saved all his stock with the exception of one animal. That one, I have no hesitation in saying, he had suffocated. An animal might have had a cold or a cough; but I am enabled to say there was no case of pleuro-pneumonia. Cases like that to which I have thus referred are not uncommon. One sees receipts constantly given which are of no use; one sees some trifling application in the nature of fever medicine—nitric ether, simple nitre, or something of that kind—advertised as a successful remedy for pleuro-pneumonia on a farm; and what I contend is, that there has not been any instance of that disease on the farm where the supposed remedy was successful. It must, indeed, have been evident to the scientific man that there never had been such a case. Is it reasonable to suppose that a disease which has baffled the accumulated science of the time, and on which no medicine that has been discovered has the slightest influence, would yield to a dose of nitre or nitric ether, which one uses for a common cold? On the face of things the notion is altogether absurd."

He considered that if the connection between the veterinary art and agricultural practice had been thoroughly realised, such mistakes as those to which he referred could not have occurred; and in order to show some of the leading features of the relationship between

veterinary art and agricultural practice, he referred to the origin of the animals which we have to deal with, or, in other words, the question of breeding.

With respect to horses, he stated that "cart horses"—that is, the breeds of horses used in farm work—although frequently badly managed in point of stable accommodation, as well as general treatment, had yet, by some means or other, "escaped the deterioration which has affected other classes;" and he illustrated the deterioration he referred to by comparing the hacks of the present day with what they were at a former period, it being, "only by the rarest chance," he said, "that one meets now with an animal that will carry one pleasantly;" that, no doubt, plenty of animals are to be found that will carry a man safely to his destination and back, but the hacks which will ensure pleasure in riding them are few and far between. This he attributed to the careless manner in which they are bred, and the practice of putting whatever animal a man has to everything that turns up—the saddle in the morning, then the gig after breakfast, with, perhaps, a turn in the dung cart or plough before night. This is certainly not the way to make a pleasant hack, but it is the jack-of-all trades fashion which is unquestionably very much in vogue.

From the hack, Professor Brown passed on to the hunter, and "in this case," he said—

"You may get an animal that is very fast, and will jump remarkably well; but in anything like the old-fashioned run of five-and-forty minutes, how remarkably few animals will you find in at the finish! How much is there sacrificed of good bottom and tone, and length of body and shortness of legs, to the miserable system of breeding a pretty-looking horse, with anything but a long body and anything but short legs! If the animal has a small head and tolerably thin neck, which he curves in a dignified manner, public taste seems to be quite satisfied. Now this state of things ought not to exist; and with a proper association of veterinary science with agriculture it could not exist."

Having disposed in this manner of the horses of modern times, Professor Brown next turned his attention to the other classes of stock, respecting which he said:—

"I grant that you have done a great deal in that respect. Your short-horns are a marvel. At every periodical inspection I find them advancing; and we have here, perhaps, the most astounding instance of progressive development which natural history furnishes. It appears from the remarks of M. Girard, who was in his day a scientific man and a close observer of cattle—I am speaking now of French cattle—a good animal had in his day its permanent teeth well up and its dentition perfected at the age of five or six years. I constantly find short-horns with full dentition under three

years of age. The attainment of perfect dentition is, I need scarcely say, a proof that the animal has reached the period of maturity. In the case of sheep we have advanced a year, and in that of pigs a year and a half. The pig, which used to require three years, has now perfect dentition and full bodily development at the age of eighteen months. This shows what can be done when a certain thing becomes advisable, and attention is directed to it. It seems a strong fact in support of Mr. Darwin's notion that you can almost do what you like in such matters. Pigeon fanciers tell us that they can breed to any particular colour that they wish in the feathers, and what has been done in the case of pigeons affords a strong presumption in favour of that theory. But remember that where you have precocity of development there is a corresponding want of tone in the system. It appears to be an invariable law that that which is quickly produced shall not long continue. Hence it is that those animals which you have succeeded in breeding in such wonderful perfection in so short a period are remarkably subject to disease. You will rarely find the lungs of a sheep two years old free from organic malady. Such animals are constantly exhibiting in the internal organization tapeworms and hydatids almost without number. Moreover the problem has yet to be solved what particular kind of food is best adapted to sustain the animal's body, and to bring it to early maturity without any unnecessary loss of its tone or nutritive properties. I do not stand here to tell you that a sheep of the age of five years would be much better food for the people than a sheep of the age of one year. But the question is, not which animal is best for the market, but which will pay best, commercially speaking. It would be altogether unreasonable and absurd to expect the farmer to keep his sheep up to the age of four years, merely that people might have better mutton. Of course, one would always prefer four-year to one-year-old mutton; but one is tolerably contented so long as the mutton supplied is in a healthy condition. It is admitted that the presence of sheep on the farm is a necessity of English agriculture; in fact, our system of wheat growing, in connection with turnip husbandry, is dependant on that animal. But the question for the agriculturist to decide is, how long the animal may be most profitably kept. My own opinion is, that, as they are at present bred and fed, if the growing flocks of the country were retained two years instead of one, the loss of the farmer would be irremediable, and the percentage of deaths terrific. Knowing what I do about the condition of such animals about the age of one year, which may be regarded as the term of tolerable maturity and general development of the bodily system, I hold that with the same method of feeding—I mean feeding largely upon roots containing an enormous per-centage

of water, and tending to produce a flabby and loose condition of body—the animals would suffer seriously if they were kept much longer. While the present system of feeding exists, no remedy for the evils which accompany it can be suggested."

At a subsequent part of the proceedings, Professor Brown explained that when he referred to the danger of keeping sheep until they attained a greater age than is usual in many parts of the kingdom he alluded to wethers, not to breeding ewes, which are not forced at an early age, and are, therefore, placed under more favourable circumstances for the attainment of longevity than the other class of sheep, which are destined for the butcher as soon as possible.

The system of fattening stock for exhibition called forth a strong protest from Professor Brown; and in order to show what he, as a professional man, has to say against a system we have frequently reprobated, we ask the attention of our readers to the following extract:—

"The object of agricultural exhibitions should be to encourage the development of the most perfect forms of animals—not to create a large amount of fat; and the animals which I see from year to year are far from satisfying me in this respect. I observe more and more fat laid on, apparently for the purpose of concealing defects; and I regret to be obliged to say of the judges, some of whom probably are present this evening, that they are in some degree responsible for this. I do not know whether it is really the case that they judge favourably according to the amount of fat upon an animal's body, but I do know that breeders generally are under the impression that they do so. Breeders say, 'It is no use sending that animal to the agricultural show; it is not fat enough for that purpose!' That is language which ought not to come from the mouth of any breeder in the kingdom. In examining the internal organization of animals which have died, I have found, in many cases, fatty disease of the liver—a disease which it might well be supposed was confined to men who loved to gratify their taste for turtle-soup, and other things containing a large quantity of oleaginous matter. I have found this disease not only among stock, but even among horses and cats. It exists, I believe, at the present time among horses, cattle, sheep, and calves to an enormous extent; and the presence of such a disease as fatty liver proves that there is something essentially wrong in the present system of feeding, and suggests the importance of proceeding on regular scientific principles, which, though they may be imperfect, are, nevertheless, as far as they may go, tolerably well defined."

We must state, however, that there was a difference of opinion on some points connected with the over-fattening system between Professor Brown and Professor Voelcker, who was

present at the meeting. The last named high authority considered "that the great practical mistake in the art of feeding was, the excessive supply, not of fat-producing, but of flesh-producing materials," and he stated that in oil-cake there was nearly 30 per cent. of flesh forming substances.

"He (Prof. Voelcker) thought a great practical mistake was made at the present time in the art of feeding, in the excessive supply of nitrogenous food. He could not understand, speaking chemically, how even 10 lbs. of oil-cake could be assimilated with any advantage to the animal, or without deteriorating, in some way or other, its constitution. They had been too much in the habit of regarding an animal as a manure-producing machine. Certainly, it was a manure producing machine, but only to a certain extent. They must not make the ox, or any other animal, merely a machine of that kind. They could not feed even a thrashing machine so as to overload it, without doing it some injury: and by giving cattle 10 lbs. of oil-cake, which was considerably below the quantity sometimes given, they must injure them. This was not an opinion expressed at random; he knew as a fact that injury was done by an excessive quantity of cake, and especially cake that was rich in nitrogenous matter. It happened in the case of linseed cake that the nitrogenous matter was associated with an oil which was well known to possess laxative properties that took away any injury. But when they gave any other description of cake, however good it might be, in which the nitrogenous food was not associated with the medicinal linseed oil, injury was done. In his practice, cases had continually occurred in which the stomachs and intestines of animals had been sent to him, with a request that he would examine them and see from what cause they died. He could find none; but on inquiry he found that the mischief arose from an excessive supply of cake which was exceedingly rich in nitrogenous matter, especially nut-cake and cotton cake. [A Voice—Decorticated cake?] Yes, and it was remarkable that the decorticated cake, which did not act mechanically, like cake which was made from the whole seed, and having the shell on, might be considered indigestible. The pure decorticated cake—the genuine, highly nutritious article—in many cases produced serious mischief. He, therefore, differed to a considerable extent from his colleague in the supposition that it was an excessive supply of fattening food that produced disease in cattle. He was rather inclined to think that it was an excessive supply of nitrogenous food. According to this view, 5 lbs. of cake of a good description was about the maximum quantity that ought to be given to an animal; all above that he considered calculated to do more harm than good."

Professor Voelcker's opinion led to a slight passage of arms between him and the lecturer,

illustrating the old proverb that "doctors differ;" Professor Brown holding that oil-cake was not nitrogenous or flesh-producing food, and that it was the oil, or fat, it contained which produced disease in those animals to which it was given too liberally. Professor Voelcker maintained, on the contrary, that "the oil was a remedy just as he considered a dose of castor-oil useful if his boys had eaten too much plum-pudding." Professor Brown, however, stuck pertinaciously to his view of the subject, and had, of course, "the last word" in his privilege of reply.

Returning, however, to his lecture, he showed that the veterinary art had a much wider field in relation to horses than in relation either to cattle or sheep, because in the case of the horse the carcass is worth nothing, and, therefore, it is always worth while to keep him in health; whereas diseased cattle and sheep could be, and were, sent to the butcher, rather than incur any loss from impaired condition, even in the event of the animal being successfully treated.

"If you get," he said, "a valuable hunter back from the veterinary surgeon a mere bag of bones, but with sound wind and limb, you know perfectly well that a certain amount of care and keep will restore him to his former condition, and the result is that you are satisfied, and the veterinary surgeon obtains the credit of having achieved a good cure. On the other hand, if a fattening ox loses all that he has gained during six months, and it takes six months to bring him to his former condition, the veterinary surgeon gains no credit, and at the same time you are considerably out of pocket; therefore I do not think farmers show any want of a due estimation of the veterinary profession when they decline to submit their animals, under such circumstances, to medical treatment, or can be blamed for not keeping their animals without such treatment in a condition of disease which necessitates a loss of bulk."

He blamed farmers, however, for not consulting veterinary surgeons more than they do, when their animals are threatened with disease, and referred to the good results which followed the combination of agriculturists and veterinary surgeons when the small-pox broke out among certain flocks in Wiltshire last year, "as a convincing proof that agriculturists, by associating themselves with veterinary science, and acting together as one man, may do a very great deal towards the prevention of disease."

There was another point also in which he considered veterinary superintendence absolutely necessary, namely, in deciding what diseased animals were fit and what were unfit to be used as human food.

"A large number of animals which are not fit to be sold as food are constantly being sent into the market. Some time ago, wishing to obtain some subjects for examination, I sent to

a large butcher for them, and I received back five or six animals which, though in a bad state of rot, were dressed for the market. I have also been told by an individual that between the town where he resided and London he had within the space of six months killed no less than 750 animals in a state of extreme disease. I believe those animals were all sent to market. Can one doubt this for a moment? What becomes of all these rotten sheep? We see hundreds and thousands of them alive—what becomes of them when dead? To bury them would require whole catacombs; the real catacombs are the intestinal canals of the human body. We hear of the small-pox, scarlatina, and typhoid fever prevailing among the poor; and can we wonder at it, under such a state of things? No one can suppose for a moment that this evil ought to be allowed to continue.

He stated his belief that the chief use of the veterinary science is in prevention, and concluded by urging the extension of agricultural colleges, the establishment of farmers' clubs, and occasional lectures, "the inspection of stock in different parts of the country, and a general combination of interests," as the best means of drawing closer the relation between the veterinary art and agriculture.

We have already indicated some of the points which were taken up in the discussion which followed Professor Brown's lecture, and there was a tendency evinced by several speakers to devote their attention chiefly to the points which had arisen respecting the feeding of stock. This was checked by Mr. Corbet, the secretary of the club, who brought the meeting back to the real merits of the question, in a few very apposite remarks. He asked:—

"Was 'the veterinary art in relation to agriculture' properly a breeding or a feeding question? According to his notion, it was more the former than the latter. If they had an overfed ox, a turkey, or pig, the best thing they could do was to cut his throat; but if they had a thorough-bred stallion, a good bull, or anything of that kind amiss, they should at once send for the veterinary surgeon. He was, he confessed, almost sorry the subject had not been introduced by a farmer, who would have told them what he required under such circumstances. He (Mr. Corbet) believed that what the farmer wanted was a veterinary surgeon, especially in relation to the more valuable portion of his animals, namely his breeding stock. There were not veterinary surgeons enough. How were they to get more? Why, by giving them more work. How were they to give them more? By giving them a better introduction—an object which might be secured by the various agricultural associations throughout the country. In his opinion, every district society should have a recognized veterinary surgeon attached to it. He had sometimes the honour of acting as a judge at country shows.

The first question which he asked when he went into the yard was, 'Have you a veterinary surgeon?' The answer generally was, 'We have not, but we can get one,' to which he replied, "Get him then." A veterinary surgeon had a recognized status; and if all the judges in England were to swear one thing, and a veterinary surgeon were to swear contrary, depend upon it in nine cases out of ten the local gentlemen would go with the surgeon. He thought that one of the primary duties of the agricultural societies of this country was to recognize the veterinary art. Thus far it had been recognized only in a very inadequate degree. Even the Royal Agricultural Society kept the veterinary profession at arm's length as long as it could do so; but the preliminary examination had now been found of very great value. Veterinary science was, in fact, of great importance as regarded the breeding of stock. Professor Brown had told them some curious things about fat mutton, but he did not think that was exactly the point which they had to consider. Supposing they gave a prize for a horse or a bull, what was the effect of that? It was not the mere value of the £5 or £10, but the prize stamped the animal as being a description of stock the breeding of which might be advantageously encouraged and extended. If they had not a veterinary surgeon to step in and condemn, 'on authority,' hereditary unsoundness where it really existed they might go back, and give a prize for a horse that was a roarer, or an over-fed bull which could not get stock, thus doing great injury to the cause of agriculture. He maintained, therefore, that the relation of the veterinary art to agriculture was to be looked for, not so much in connection with fat stock as in connection with hereditary principles and breeding; and he repeated that the best introduction for veterinary surgeons should be made through the various agricultural societies."

The principle set forth by Mr. Corbet, that every farming society should have its recognized veterinary surgeon, is one which has been adopted by the Co. Kildare Society in this country, and ought to be adopted by every association of the kind; and if the veterinary surgeon who is attached to such a society would assemble the members two or three times a year, and give them a little plain instruction with respect to those points which, if attended to, will prevent disease among their stock, he will be rendering his services much more valuable to them and to the country at large. We cannot but express our regret that we have not any means of imparting information on veterinary science on this side of the Channel; our sapient rulers have abolished the only means of instruction we possessed, and though we have those who write themselves down as professors and lecturers of the veterinary art among us, the distinction, so far as public in-

struction is concerned, is purely nominal.

Perhaps we may improve, however, even in that point, "in the good times coming."

WIDE RANGE OF FLAX CULTURE.

The following information from a recent Editorial in the *Mark Lane Express*, will be found both suggestive and interesting to Canadian readers:—

The counsel we have frequently put forth, as to the desirability of increasing our own production of flax so as to be more independent of foreign supplies, and at the same time stimulate the activity of our mills, is, we are pleased to mention, beginning to have some effect. On all sides we see progress making of a very energetic kind. In Ireland there has been a much greater breadth put under flax. In Dorset, Somerset, Norfolk, and in certain parts of Yorkshire, flax is grown in small quantities: but in England generally this crop makes but little head. The great consumers of flax and hemp are, however, still obliged to import the chief bulk of their supplies from the north of Europe; and it does seem strange that Russians, Belgians, and Poles, should be able to grow, manage, save the seeds of, and dress flax better than Englishmen, and, in addition, furnish them with that cake which costs so much, as well as adds to the weight of their sheep and bullocks.

The acreage under culture with flax in Ireland this year, according to the statistical returns of the Registrar-General, shows a very large increase over any preceding year. The extent of flax growing in Ireland this year has reached 214,092 acres, an increase of 64,022 acres over last year, which, with 1852, were the years when most land had been put under culture. The great bulk of the increase, 61,000 acres, is of course in the province of Ulster; but even in the other three provinces there is an average increase of 1,000 acres each in the land under culture with flax, as compared with 1862. Down is still the largest flax-growing county, having 45,000 acres devoted to it. Tyrone stands next in order, with 32,000 acres.

The value of the annual production of flax fibre throughout the world was estimated, three years ago, at £20,000,000, and of the seed at £4,000,000; but since the outbreak of the civil war in the United States the price of this raw material has suddenly risen, its production has greatly extended, and its cultivation has received a sudden impetus, so that the entire value of the crop in Europe may now be estimated at £30,000,000 per annum, with every prospect of an increase. In the production of flax in Europe, different countries take the following rank: first Russia; second, Austria; third, France; fourth, Ireland; fifth, Prussia; sixth, Belgian; seventh, Holland.

In the United States flax has never been a

favorite crop as a fibre-producing plant. "It is to be regretted," says the superintendent of the United States census for 1860, "that the manufacture of flax has not attained great magnitude in a country where the raw material is so easily and cheaply grown. Farmers throughout the West have raised this crop simply for the seed, and thrown out the fibres as useless." The census of 1860 shows that there were produced in the States north of the cotton States 4,547,000lbs. of flax. This quantity would require, at 200lbs. an acre, about 23,000 acres for its growth. But in the same States there were grown in the same year 484,794 bushels of flaxseed; and which, at eight bushels to the acre, would require a little over 60,000 acres; showing that nearly two-thirds of the fibre was thrown away.

There are three directions in which we may look for increased supplies of flax from our own possessions—Canada, Northern India, and Australia. Notwithstanding the admirable fitness of the climate of Canada for the cultivation of flax and hemp, and the encouragement in a certain direction which has been given to it, it appears that the importations into that province are very considerable, and last year reached the imposing sum of £30,000. Much has been done of late years in Canada by private and public enterprise to assist the cultivation of this important plant. The Canada Company some years since placed a sum of money at the disposal of the Agricultural Association to be given in premiums for flax and hemp, and the Association itself offered other prizes and diplomas for the same object. In October, 1854, a voluminous report was submitted by Mr. Kirkwood to the Minister of Agriculture, on the system of cultivation of flax as practised in Belgium and the British Islands, and published in the Colonial Parliamentary Reports of that year. The letters of Mr. Donaldson, the Government emigration agent, published in different papers in Canada, furnish an excellent summary of the attempts which are now being made to introduce the cultivation of flax and the promising results already attained. Private individuals have offered prizes to stimulate farmers to grow this product. Associations have been formed in Upper and Lower Canada to effect the same purpose, and recently the Government has imported flax scutching machines from Europe, and distributed them throughout the province.

In 1862, the Colonial Government caused public lectures to be delivered on the importance and advantages of cultivating textile plants in Canada; and the Department of Agriculture and Statistics has been importing first rate seed from Europe for distribution. Extensive factories are now in course of construction, for the manufacture of flax; and the Board of Agriculture for Lower Canada has imported machinery for a similar purpose. The Minister of Agriculture, after a brief recapitulation of what has been done to promote the cultivation of flax

and hemp in the colony, concludes his report for 1862 with following words:—"The Legislature should, therefore, vote a special amount this year for this purpose."

Something has been done, of late, in India, to extend flax culture, and very good specimens of prepared flax and flax stems from native and from acclimatized seed, grown in Punjab, were sent by the Lahore Committee to the late International Exhibition in London.

Flax is mentioned by Strabo as one of the staples of that part of India. A small quantity of Riga seed, which had been imported expressly by Dr. Jameson, superintendent of the Government Botanical Gardens at Singapore, was lately distributed amongst the peasants, with instructions as to the mode of cultivation. An agent of great practical experience was deputed to examine and report upon the qualifications of different districts for the growth of flax; and a staff of natives were trained by him to act as scutchers.

In 1856, two tons produced under his superintendence, in the village of Goojranwalla, were sent to England, and sold for £92, realizing a net profit of 47 per cent. In 1857, 8cwt. of flax, grown at Juddura, a tract of country in the Kangra district, bordering on the river Beas, was sent home, and was valued at from £55 to £60 a ton. In consequence of the success of these experiments, an association, called the India Flax Company, was established at Belfast, and sent out Mr. Wightman, an agriculturist, as agent, to buy up flax produce. He has made the district of Sealkote, in the Punjab, his headquarters, and, as far as can be judged, has every prospect of ultimate success, as the natives are now beginning to see that there is a day of large profit before them, and join heartily in the movement.

The growing of flax in Australia has been at different times spoken of, as an article of commerce; but the matter was allowed to drop, or laid aside as a thing, if not impossible, at least improbable, the soil being, in the estimation of some, unsuitable, as well as the scarcity and price of labour being such as would make it unwarrantable even to give it a trial. There is one great fact that ought to be universally known in the commercial world, and that is that there are in Australia hundreds of thousands of acres of wild flax growing along the banks of the rivers, and on the immense alluvial flats and numerous swamps, in some places so thick that it would be difficult to determine which was the predominant crop, grass, rushes, or flax. Years have now passed on, and no trial has been given to cultivate that valuable plant, which the very soil itself declares in unmistakable language its suitability to grow. There is, then, an indigenous plant growing there, on land the least remunerative now, but which could be made the most productive land in the colonies, whether of South Australia, Victoria, or New South Wales. By proper cul-

tivation a finer article could be produced than any of the European flax, or at least equal to the finest flax produced in Belgium or France. The time is fast approaching when necessity will suggest a greater variety of pursuits than at present exist, and industry will have a wider field and a freer scope in a country possessing so many valuable natural endowments, both as regards soil and climate. At the present time, viewing the agricultural interest of Australia in its depressed state, any new article of production ought to be of the greatest importance. What, then, could be ultimately of more advantage to the colony and to the agricultural interest than the successful cultivation of so valuable an article as flax.

We subjoin the following practical directions for growing and curing flax from the pen of Mr. T. L. Henley, an extensive manufacturer in Yorkshire:—

"1st. Does flax-straw require any care besides being pulled when the seed is ripe, and then being harvested as other corn?"

No. The sooner it is harvested when fit the better, as wet weather injures it to a certain extent, and it will not weigh so heavy in consequence; but this objection applies to almost every other crop in proportion, and flax will bear without injury as much rain as any other crop that can be grown.

"2nd. What is the best seed to sow?"

Riga, if it can be procured at a reasonable price, but English seed will answer every purpose, and if sown early in March may probably do the best, it having, to a certain extent, become acclimatized, and will therefore stand the frost. A friend of mine grew 14 acres this year from English seed; it was sown early, and the frost came after it was up and cut off all the potatoes adjoining, of which there was a large quantity planted, but the flax was not injured in the least. Early sown flax always weighs the heaviest, and will stand the weather better than that sown later; it is also fit to pull a fortnight before harvest commences.

"3rd. When, how, and how much seed to sow, and in what rotation?"

Flax should be sown as early in March as possible: it may be continued until the middle of April, but the earlier it is sown the heavier will be the crop. With regard to soil and rotation, I refer growers to the following, copied from Mr. Warne's work on flax, with some few alterations which experience has taught us to be advantageous. For my own part, I prefer a crop of flax after wheat to any other: the land is generally cleaner, and the unspent manure which has been applied to the wheat crop is all flax requires. A friend of mine has this year realized within a fraction of £15 per acre by his flax crop in this manner sown from English seed.

MR. WARNE'S DIRECTIONS FOR THE GROWTH OF
FLAX.

Soil and Rotation.—Good flax may be grown on various soils. The best is a sound, dry, deep loam, with a clay subsoil; although Mr. Warne's experience proves that good crops may be produced on very thin land. Except on very poor soils a better crop may be grown after grain. If lea land be broken up and turnips sown, followed by corn, a fine crop of flax may be obtained the ensuing season.

Preparation of the Land and Sowing.—After corn, one ploughing will be sufficient, which should be in the autumn, as the fine tilth produced by the frost renders the land more fit to receive the seed. The seed best adapted for the generality of soils is *Riga*, although home-grown seed has been used of late with perfect success; the proportion should be $2\frac{1}{2}$ bushels per acre. The ground should be well harrowed before sowing, and lightly rolled; the seed should then be sown broadcast, and a very light stroke of the harrow given afterwards, which will leave the seed buried about an inch, the proper depth; it should then be rolled again. A good crop of rape or turnips may be grown after the flax is pulled.

Weeding.—If care has been taken to clean the seed, and the soil managed as above, few weeds will appear, and the trouble of weeding will be almost obviated.

Pulling and Harvesting.—The time when flax should be pulled is when the seed is beginning to change from a green to a pale brown colour, and the stock becomes yellow about two-thirds of its height from the ground. It is first drawn in handfuls and tied and set up like wheat. It should remain in this state until fit to harvest, which will be in a week if the weather be fine, when it should be either carted and put in rick, or if preferred it may be stooked, i.e., put in small ricks as many poor people do, and left until after harvest. N.B. The cost of pulling need never exceed 10s. per acre.

“Lastly. What is the feeding value of the seed as compared with foreign?”

I can best answer this by referring your correspondents to Messrs. Taylor, of Bradford-on-Avon, Wilts, who for many years have sold large quantities of crushed linseed to the farmers in that neighbourhood for feeding purposes. I believe those gentlemen will bear me out in saying that English seed is far preferable to any other for that purpose. I would also refer them to a pamphlet on “Cattle Feeding,” published by Messrs. Proctor, of Bristol, some two or three years ago, (copies of which, no doubt, would be forwarded upon application), in which they show that a mixture of beans and linseed is the finest fattening food of any that can be procured at the same price.

VITALITY OF SEEDS.

The period over which the vitality of the different kinds of seeds can be prolonged is one involved in much difficulty. It is rather surprising that such an amount of contradictory opinions should still exist on a matter where, it might be supposed, means could be devised for giving us far more precise information than any that we possess. The experiments which have been undertaken for this end have certainly not been at all satisfactory, and they often seem to be quite opposed to certain well-known facts that give strength to conclusions of a different character. If we remember rightly, the results of Dr. Daubeny's researches, conducted at the instance of the British Association for the Advancement of Science, were that the seeds of plants had very limited powers for resisting the chemical influences to which they were exposed in the soil, and soon become incapable of germinating. So also Mr. Berkeley, the eminent vegetable pathologist, in the last number of the *Royal Agricultural Society's Journal*, expresses somewhat similar views. He there tells us—“Each seed has its own range of temperature, within which alone germinating can take place, and a limited period beyond which its vitality cannot be preserved. Carefully conducted experiments do not confirm the marvellous accounts which are from time to time brought forward respecting the suspension of germination for many centuries.”

It has always appeared to us that what are termed carefully conducted experiments have been of an entirely one-sided character, and not suited to establish any sound conclusions on this subject, at least so far as regards the great majority of the seeds which are sown by nature. The seeds of cultivation—such as wheat, barley, and oats—may be said to be created for the special purpose of supplying food for man. In these there is a large accumulation of nutritive matter, which is surrounded by a thin skin or covering of indurated substance, for the purpose of protecting it from the action of the elements. Wheat, it will be generally admitted, at a cursory glance, does not seem well fitted for resisting for any length of time the ordinary chemical changes to which it is subjected when in the presence of heat, light, and moisture. It is therefore not to be wondered at that wheat is, perhaps, as liable to have its vegetative power impaired by heat and moisture as any seed with which we are familiar. To preserve the vitality of wheat to its full extent, it is well known great precautions must be used. If the grain be committed to the ground in too damp a state in autumn, it is apt to die, or, as is commonly

said, "it starches." The seed will not remain dormant through the autumn and winter, and then germinate in spring. It will either grow or die; but this is not the case with the vast majority of annual seeds that form the pests of the farmer.

Even in the case of the oat, in some of its varieties we begin to see that it shows a striking enough divergence from the wheat. The potato variety, when shed in autumn, will usually either then vegetate or decay. Nor do we have any instances of this variety making its appearance in the land like the seeds of annual weeds in other parts of the rotation. But, on the other hand, the black Tartar oat, which seems to have a harder and perhaps a thicker skin, will lie dormant not only through the autumn and winter, but through a whole summer, while the land is under turnips, and make its appearance amongst the barley crop in the succeeding year. The vitality of the black Tartar oats, then, is much greater than the potato variety—it can better resist the agencies that promote decay in the soil. And again, the vitality of the wild variety of oat is, when buried in the earth, perhaps immeasurably greater than that of the Tartar. In all districts which are infested with this weed, it is well known that laying the land to pasture, for however long a period, has no effect in extirpating it. This plant will often make its appearance on certain spots of a field at long intervals of time, when its seeds are subjected to the quickening influence of light, heat, and moisture. We do not believe there is a single East Lothian farmer who is annoyed with the wild oat coming up amongst his crops who imagines that the laying down of the land for a century in pasture would destroy the vitality of the seeds that have been shed.

Mr. Berkeley, however, has a short article as a leader in last week's *Gardeners' Chronicle*, which is certainly a great advance on the views expressed so lately in the Royal Society's *Journal*. Here we are now assured it is well authenticated that the seeds of "three plants of different natural orders had been dormant at a depth of a yard for thirty-three years, and their vegetative power was clearly as great as if they had sprouted the very first season." Nor could we state anything more forcible in the way of comment to show that the vitality of many seeds may be preserved in the earth for centuries than in the words which Mr. Berkeley winds up his remarks on the particular case he has before him:—"Seeds that could thus be stored up for so many years, without losing their powers of growth, might, as far as we can see, have retained their powers for an indefinite period, unless altered circumstances should occur which should induce decomposition. Indeed,

this is one of those subjects which cannot be settled by any such experiments as Dr. Daubeny undertook. The time required to test it fully extends far beyond the short period allotted for the life of man. We must view the workings of nature as they are every day presented to us in the most common as on the largest scale.

Taking the most cursory view of the matter, it is difficult to see how the greater number of species of wild plants could be preserved if the vitality of their seeds did not extend over centuries. Land that has lain under a thick covering of the perennial grasses is so occupied that hardly any annual plants make their appearance on its surface during any period of the year. But break up this land by the plough and invert the surface, and then the whole is soon thickly occupied by annuals whose seeds must have lain dormant for long intervals. It is needless to mention that the wild mustard will often make its appearance on land that has been broken up for the first time by man. There are few or no annuals seen in a primeval forest; but allow fire or the axe of the woodman to do its work, and the ground at once teems with an endless variety. As we have already said, it seems quite apparent that unless the seeds of most kinds of wild plants were possessed of vitality that extended over centuries, they would soon be extirpated.—*Scottish Farmer*.

BLOOD DISEASES IN ANIMALS.

It is of the highest importance that we should notice the increasing prevalence of very fatal blood disorders which within the past few weeks have carried off large numbers of cattle, sheep and pigs, in various parts of England. For several weeks past, the meat inspectors in the city of London, have seized the carcasses of pigs bearing evidence of having suffered from scarlet fever. In all these cases the skin is deeply tinged with extravasated blood. The fat and muscular tissues are spotted all over with bright scarlet spots; the internal organs, especially the heart and kidneys, have extravasated blood in their substance, and the throat indicates swelling and inflammation. The large majority of pigs seized in this condition, have been sent to London from Essex.

In Lincolnshire the hogs or tugs are dying off in large numbers. On one farm we visited, thirty out of forty had died; on another twelve out of sixty; and information has reached us of losses to the extent of fifty and sixty per cent. in a number of places. These losses occur amongst excellent lambs, but on almost any kind of food. There has been a great dearth of water, and one of the remarkable symptoms of the disease has been intolerable thirst. A fine healthy lamb is, however, seen suddenly to

droop, diarrhoea sets in, the eye looks dull, and fleece clapped. Soon the back feels rigid and lean, the wool is readily pulled out, and the animal is feeble and dull. Diarrhoea, which sets in at the commencement of the disease, continues throughout, and in many cases worms are passed. These parasites belong to the species of thin-necked long worms known by the name of *Tricocephalus affinis*. These parasites do seem, however, to constitute the sole cause of the disease, as in many cases they have been absent. It is much to be regretted that we have no system organized for the investigation of these sheep diseases. The farmers are not enterprising, and go on losing without getting a complete enquiry into the subject, which might serve them much at the time, but especially in after years.

It is quite evident that the milk disease, or splenic apoplexy is spreading. In an article by the Inspector of Meat at Leeds, in the November number of the *Edinburgh Veterinary Review*, we find the following:—

"I have had four cases of beasts slaughtered in this fearful complaint, within the last three weeks. Two of these beasts were brought to this town to slaughter, and were condemned as unfit for human food. The third case was slaughtered at a farm house a few miles from Leeds. The farmer brought the carcass to me for examination. It was a prime neat cow, and had been well dressed; however I condemned it, to the perfect astonishment of the farmer, who told me that he had given £22 for it only four months before, and that I might as well have robbed him of as much money. I have known as many as eleven beasts which have died in one week from the effects of this disease. About three years since I went to these pastures, and I saw three beasts which had been slaughtered and dressed for human food, hung up in an open shed, another lying dead in the fold-yard, and another lying dead in the pasture. These carcasses being out of the limits of this borough, I had no jurisdiction; all that I could do was to prevent them coming into this town. They were bought by a butcher and carried to a neighbouring town, and sold for human food. I can fully confirm your statements—'remove the spleen and the carcass appears sound.' The cattle generally attacked with this disease are beasts in good condition, and if properly dressed by a butcher, could be sold at the most respectable butchers' shops without much fear of detection."

In the *Medical Times and Gazette* for last week, we find that Dr. Crisp had exhibited before the Pathological Society on the 20th inst., "a piece of a spleen of a bull which had died of splenic apoplexy. The spleen weighed twenty-four pounds, from recently extravasated blood. Fourteen pigs that ate the blood of this and other oxen that died of this disease were killed by it. Dr. Crisp had examined the throats of these pigs, and he found a whitish

false membrane covering the root of the tongue and pharynx." This shows how dangerous it is to allow blood disease to progress unchecked, and to sanction the sale of some of the best looking carcasses. In the *Lancet* for last week, special attention is drawn to observations by Dr. Parkes, of the Army Medical Department, and Dr. Eudd, of Bristol, showing that the temperature of boiling water does not destroy these animal poisons. If we have thus merely recorded the existence of fatal blood diseases in different parts of the country, it is in the hope that such records may lead to a better study of cattle diseases in general.—*Scottish Farmer*.

SELECTING EWES FOR THE RAM.

Where there is an opportunity to choose between several valuable rams, the selection of the ewes to breed to each, requires judgment and careful study. The flock of ewes should be examined, the individual excellencies and faults of each, and hereditary predispositions and actual habits of breeding, so far as can be ascertained, fully taken into account; and then she should be marked for the ram, which, in himself, and by his previous get, appears, on the whole, best calculated to produce improvement in their united progeny. Many of the Vermont farmers thus divide their small flocks of ewes into parcels of ten or twenty each, and take them to the rams owned by a number of different breeders; for, by a prevailing custom, the liberality of which cannot be too highly recommended, all the most distinguished breeders of that State allow other persons to send ewes to their best stock rams for a merely nominal compensation, considering the advantages which are often thus secured. This enables the owners of flocks who cannot afford to incur the serious cost and risk of keeping a number of high-priced stock rams, notwithstanding the services of those which are best adapted to breeding with each class of their ewes. And the young and less skillful breeder can thus, too, obtain the immense advantage of using the most perfect sire rams in the country—those which are too costly for his purchase—and those which will improve his flock more in the first generation than he could possibly otherwise improve it in five generations.

Coupling.—Very few flock-masters now feel that they can afford to bestow the whole annual use of a choice, high-priced ram on the seventy-five, or at the very utmost, on the one hundred ewes he can serve, if he is permitted to run at large with them; and to accomplish this he must be a very strong animal, and must be taken out of the flocks nights and fed by himself. And no even tolerably good manager turns two or more valuable rams at the same time into the same flock to waste their strength, excite, worry, fight, and perhaps kill each other. Even the ewes are frequently injured by the

blows inflicted by a ram while another ram is covering her.

There are several different modes of putting ewes singly. Some keep "teasers" in the flock so "aproned" that they cannot serve a ewe, and daubed with lard and Venetian red under the brisket, so that when a ewe will stand for them she is marked with red on the rump. The flock is driven several times a day into a small enclosure (usually a sheep barn,) in apartments in which the stock are kept, the "redded" ewes are drawn out and each is taken to the ram for which she is marked. After being served *once* she is turned into the flock of served ewes.

Another mode is to use no teasers, but to drive in the flock selected for a particular ram twice a day, and let him loose in it; and as soon as a ewe is served to draw her out. After three or four are served, the ram is returned to his quarters, and the remainder of the flock to the field. A very vigorous ram may be allowed to serve from eight to ten ewes a day. This last mode is now generally preferred. It takes up but little more time than the other. It saves the expense and trouble of keeping teasers, which must be frequently changed; for after making their fruitless efforts for two or three days, they generally almost cease to mark ewes. Lambs and yearlings are nearly useless for teasers. Good stock rams ought not to be put on this service, for it rapidly reduces them in condition.

Any mode of effecting the object in view—one on the correct management of which the success of breeding so much depends—must be conducted with rigid accuracy, so that the mark on the ewe shall in all cases indicate the ram actually used. An erroneous record is vastly worse than none. It misleads the owner, and cheats the purchaser who buys with reference to its showings.

The served ewes should be returned to the ram after the thirteenth day. If they come in heat again it is usually from the fourteenth to the seventeenth day; but the number is ordinarily quite small if the ram is a good one, and is well managed.—*Practical Shepherd.*

DRAINING BARN YARDS.

One way to keep barn yards dry is to put troughs to the eaves of the barns and sheds surrounding them. Usually all the rain that falls on a large area of surface is drained right into the yard. Then, if the surface is level, and cattle tread it daily, it is difficult to keep it dry, even with underdrains. But with underdrains it is bad policy to let rain water from the eaves leach the manure and run off underground, unless a tank is fixed to receive it, and from which it may be taken for use on the fields. The first and best thing to do then in the way of draining a yard is to prevent water getting into it in the manner indi-

cated above. It is exceedingly convenient and sensible, where there is no convenient source for water, to have a good large cistern to receive the flow from the roofs. With this precaution the amount of water which falls in an ordinary sized barn yard will be small. And a drain of cobble stone; or a well laid stone drain will keep the surface dry if put in the right place. The main drain, on a level, should be a deep one—say 3½ or 4 feet. If it terminates in a meadow all the better—especially if the flow can be distributed somewhat. One of the best modes after drainage, to insure a dry yard, is to clean it frequently. As the stock tread up the soil (if the yard is not paved) and drop their excrement, it should be gathered in heaps—and under sheds if possible. This may be quickly done with a team and road scraper. And it will pay the expense and labour.

Sometimes it is better to drain on the surface—make a paved surface drain, letting the liquid run into an adjoining field if there is no tank to receive it. If the yard is paved with stone, and packed with stiff clay, the surface drainage is easily secured. If there is little or no fall—if the yard is level, and no convenient outlet can be secured, a cobble stone pavement grouted with clay, with intersecting gutters leading to a sunken tank, is perhaps the most practical way of getting rid of water. A farmer with a will to have the yard clean and dry, can, with his knowledge of "the situation," and the means at command, *invent* a way to get rid of surplus water. The health and comfort of his stock, as well as his own convenience, will induce effort in this direction. And men wonder after the thing is accomplished, that it has not been done before. These little home improvements cost little and yield much in the aggregate.—*Rural New Yorker.*

Agricultural Intelligence.

STEAM CULTURE.

Every year shows a *steady*, if not rapid, advance in the employment of steam as a motive power in cultivating land in various parts of the British Islands and some portions of the continent of Europe.

An able and well known contributor of the *Farmers' Magazine* for November, gives the following encouraging account of what he recently witnessed with Howard's Apparatus on the Home farm of Lord Archibald St. Maur, near Loughborough, in Leicestershire:

Arrived at the little village of Walton, lying on a hill-side, I found the steam cultivator had done working there, and had gone to a farm two miles distant, Burton by name, near the

residence of his lordship. Following up the scent, we went down into the village just named, and then ascended by the road to an where the engine was steam-ing away in a field which, together with the whole of the district, had not many years been reclaimed from the Burton Foss, a considerable reach of which is retained by the roadside, for the cows of the villagers.

The apparatus was stationed on a bean stubble where the waggons were at work, carrying off its few last loads of beans; but the cultivator was skimming a clover lea on the other side of it, and doing good work. There was no master there to see that everything was right for the visitor, and I therefore caught the men unawares, and was glad to find all going on well. The tackle since it came has been nearly constantly at work; there have been but few stoppages, the evidence of wear are very slight, and the rope has never given way in the fair direct work of cultivation. One day it sundered at the windlass by becoming entangled; and one day, the cultivator coming in contact with a stone, it snapped. Saving these two mishaps there have been none, and the rope looks not more than one-third worn. The engineer told me that the men employed were all common farm labourers who had been otherwise engaged upon the land before the tackle came. He said the five men had 2s. a day and five quarts of beer between them and the three boys. The rope was nicely carried everywhere, and, by means of the new porters in the line of the implement's passage, the boys then were easily able to keep it off the ground. The men on headlands use three anchors each; two coupled together, one behind the other to sustain the pull, and the other, an idle one, to move forward to the next station. I observed that no holes were dug for the anchors, and that they drew into the ground when the strain was upon them. "They did sometimes give way," I was told, "but very rarely."

Being requested to walk over an adjoining field which had just been broken up after beans seven inches deep, I did so with pleasure. It presented all the appearance of having been twice ploughed and once scarified, whereas the fifteen acres therein contained had only been once moved in one and a-half days. A large set of harrows was standing on the piece which had been half broken down by them. These took a breadth, I think, of seven feet, and by steam were supposed to go over the fifteen acres twice in one day, the teeth penetrating to about half the depth of the tines which had preceded them. I do not refer to the Norwegian harrow, which is also sent out by the Messrs. Howard, but the ordinary three four-beam drag harrows sent out by them to be worked by horses, set in a frame, made to work backwards and forwards, and steered in the same way as the cultivator. I

was assured that six horses would not have broken up the same piece to a greater depth than four inches at the rate of three acres a day at the outside; so that if anybody is inclined for a little bit of calculation, here are some of the necessary items for it, at all events.

Not being successful in my search for the bailiff, I left my card at his house, and he has obligingly sent me the following particulars:

The land in Lord St. Maur's occupation is about 850 acres. Of this quantity 550 acres are arable, and 300 grass. The whole of the arable land is heavy, the substratum being clay, and four horses are generally used in ploughing a furrow 4 by 9 inches. A great deal has been done to prepare the farm by steam. Several fences have been removed, and a considerable amount of timber. The average size of the fields is now about 16 acres. The land has been drained from 3 to 4 feet deep, and since cultivated by steam, "*it dries in half the time of similar land, also drained, done with horses.*"

The apparatus was supplied in the last week in February of the present year. It then consisted of a 10-horse power engine, £295; one three-furrow plough, £50; one cultivator, with windlass, 1,600 yards of $1\frac{1}{2}$ -inch steel-wire-rope, rope-porters, snatch-blocks, anchors, &c., £230; duplicate parts and fittings, &c., £53; the set of harrows, £20.—Total, £648.

Beyond the cost of two or three rope-porters accidentally broken, the repairs are *nil*.

The work done is as under: Up to the 24th of June last, 263 acres of the heavy soil had been ploughed and cultivated, and then the tackle was placed under cover till about a month ago, when it was again put to work, and has since broken up, crossed, and harrowed 50 acres, and broken up and harrowed 40 acres of stubbles.

"From the experience we have had," writes Mr. Mountstephen: "I consider we can break-up our strong land 9 inches deep, at a cost of 4s. per acre, doing upon an average 6 acres per day, including removals, &c. I shall not pretend to estimate the wear and tear, but I am quite satisfied that it will not be greater, if so costly, as it has been with horses. As an instance of the cost of the latter, I sold three horses by public auction for £33, which originally cost £122, and a number of horse implements at less than half their cost.

"I have reduced the horses on the farm from 21 to 13, although 70 acres of additional land have been taken in hand; this was in a wretched state, and would have required 4 more horses, so that I am doing with half the horse-power, besides being much more forward with my work than I ever was before. The horses I now have are more cheaply kept, and have done for harvest, for I have stacked more corn in the field instead of drawing it all to the stackyard."

This additional land taken into cultivation would have necessitated the purchase of six more horses, instead of which it will be observed the writer has parted with 6.

I requested to know whether it was thought that steam cultivation had made any difference in the texture of the soil or its produce? The reply is as follows; "The land is worked with about half the power now where it was steam cultivated in the spring. No increase is to be observed in the crops, the summer having been rather dry; harvest is much earlier, owing to our having been enabled to sow earlier in the spring.

"No difficulty whatever" has been experienced in finding men to work the tackle. "I consider our trial of steam cultivation a great success," writes Mr Mountstephen, "and it is admitted to be so by most of the people who have seen it, and by those who were most prejudiced, especially the old farm labourers, who were certain it would never answer. I am convinced, when our land is once in condition, the cultivator will do all the work, and enable us to dispense with ploughing altogether."

F. R. S.

We subjoin a brief notice from the same source of the performance of Fowler's Steam plough at the recent Agricultural Exhibition in Holland. Fowler's apparatus is distinguished for strength and efficiency, and has hitherto carried off the first premiums and medals in all cases of competition. It is however expensive, costing about a thousand pounds, complete! We saw it plough in England three years ago three furrows at once ten inches deep up a steep incline of dry hard clay, which scarcely any practicable amount of animal power attached to the strongest ordinary plough could have worked at all; the work was done thoroughly and with extraordinary dispatch.

THE EXCURSION TO MR. AMERSFOORT'S FARM AT THE LAKE OF HAARLEEM.

The show-yard was entirely deserted on Saturday in consequence of this excursion to Mr. Amersfoort's, who threw open his grounds, buildings, and farm for inspection. The distance from Haarlem is about seven English miles, and an agreeable ride it was. Not far distant from the farm is one of the three engines, of 500 horse power, used as a pumping engine for draining the tracts of land around. The farm being reached we were introduced, in the first instance, to the field where steam-ploughing was going on. The land was nice and level, and anything but stiff, with a clay subsoil and just the place for steam-ploughing to be seen to perfection. It was Fowler's direct system; the engine was a 10-horse one, and pulled a three furrow balance plough, but

the self-moving anchor seemed to puzzle the novices in steam-ploughing; they could not account for it, and it was laughable to hear how some settled the point; but the greatest wonder to all was to see "the mere lads" managing the whole of the tackle, the driver of the engine itself being not more than eighteen while all the others were younger. There was no noise or confusion; each seemed to mind his business, and thoroughly intent upon his work—in fact, to the by-stander, one was at a loss to know if there were any difficulties "where they were." The engine propelled along the road, and between it and the field ran a nice stream of water, and no hedges of any kind, the engine feeding itself direct from the stream. Seeing this work one cannot imagine why those who have the land to plough, and the capital, should hesitate. Adjoining the field where steam-ploughing was going on, was a field of mangolds, and to see these roots was enough; the ploughing was ten inches deep, and was well done, leaving a nice angle. From the field we were conducted to the fixed machinery. There was a Ransome's engine and thrashing machine, and shown at work, while another strap set in motion a Turner's crushing mill, Bentall's pulper, a grinding mill, and various other machines. In the yard close by was the "tramway" in lengths, of the Messrs. Crosskill's nicely piled up, ready to be laid down from here to any part of the farm, on which run the trucks, and bring in the produce, for Mr. Amersfoort does not believe in horses for this work. Next came the building where the cows are housed, and a better arranged place we do not remember to have seen.

LADY PIGOT'S GREAT SALE OF SHORTHORNS.

The doings of this lady in this important department of husbandry have attained within a half dozen years to a world wide reputation; and her recent sale at Branches Park realised a total of about five thousand guineas! We select some remarks from an elaborate report of the sale in the *Mark Lane Express*; concluding with an interesting little speech from her Ladyship, whose enthusiasm seems to increase with the measure of her success;—

Those Britons who love the Ring-side, have, as Mr. Gladstone would observe, "one of three courses to pursue." They can back their fancy, and undergo some 3m. 20s. of St. Leger agony on Doncaster Moor; they can run the risk of being bonneted and robbed by "The Fancy," in the grey dawn of a Tuesday, at the Great Western Station; or, if they venerate the short-horn, they can mount the waggons with Weth-

erell or Strafford, as "Mr. Speaker," and hold a pleasant parliament of their own. The present year has been unusually productive of such gatherings in Cambridgeshire, and Branches has just beaten Babraham in its average, which is £57 8s. 10d. for 79, against £55 14s. for 82, and £54 17s. for 63. The spirit which "Lady Pigot's lot" has infused into Royal and country shows, her Royal victories, first with Second Duchess of Gloucester and Empress of Hindostan, and then with "The Pride" and the wondrous Rosedale, and her daring and too often unfortunate purchases, have been duly noised abroad, and formed the staple talk of many a market table for these four years past. Hence it can hardly be wondered that people were led to invest the dispersion of her herd with the idea of "a sensation sale," and determined, even if they do not buy, to take a run down to Newmarket, and see what they call the fun." Branches Park was equal to the occasion, and the largest company and the best average of the year were the upshot. It lies about seven miles from Newmarket, and true to the traditions of the place, the very first object which catch your eye, as you enter the front hall, are the heads of the departed Stanley Rose and the Queen of Athelstane. Mr. Wetherell was sitting calmly under the first memento of his old favourite, as we gave him our first greeting; but Mr. Douglas would have shrunk from the sight of The Queen, as the complaint of which she died had made her nose as black as a Poll Angus.

Lord Feversham in his chaise-in-four was one of the earliest morning arrivals; but the London division (to whom a special train was allotted at night) had rather a sharp run to be there for the luncheon, and those who especially meant business rested over-night at Cambridge or Newmarket. After the inspection, there seemed a pretty general opinion that the average would not be higher than 55 gs. Princess Edward, Empress of Hindostan, Pride of Southwicke, and Rosedale, were "doubtful"; many of the females were voted very middling indeed, and the majority of the bulls (of which eleven were white) lacked shoulders, and passed muster very badly in the house, although they looked well enough in the "charmed circle." There were, nevertheless, "plenty of plums in the bowl," with good men and true to bid for them, and after a survey of Mr. Booth's Ravenspur, by Sir Samuel from Red Rose, the four hundred sat down to a very beautiful luncheon, which was set off by a long line of prize cups, with the Durham County Challenge Cup as their imposing centre.

The tent was pitched in a very picturesque spot, among the oaks and elms in the park, about two bow-shots from the ring, whose rails (the same which had twice done duty at Babraham) were entwined with ivy, box, and laurel. When luncheon was nearly over, her ladyship left her phaeton and brown ponies, and was led in by

Sir Robert, amid greating cheering, to the noble chairman the Duke of Montrose's table. His Grace then rose, and after giving the health of the Queen, proposed that of Sir Robert and Lady Pigot, and spoke of the pleasure he felt in believing that a Shorthorn career which had been so successful hitherto in the show-yard was not to end with that sale. Sir Robert in returning thanks, expressed his thankfulness that his grace had not separated husband and wife, but made it certain that her ladyship would lend him her aid in a reply; and trusted that they might in future, as hitherto, keep up the fame of the Booth blood at Banches. Her ladyship then spoke as follows: "In the presence of the distinguished breeders of Skyrocket and Royal Butterfly, the representatives of Warlab and Killerby, and my excellent Shorthorn tutor, Mr. Torr, I feel almost ashamed to hear the sound of my own voice. However, I must try and use it to thank you for your great kindness in coming here to-day, and I hope you will give me an excellent average. Now remember, I have won 217 prizes—no, I am wrong—268 prizes; and I intend to come out again with a new herd, and beat the best of you, meet where we may (great cheering and laughter). Permit me once more to thank you from my heart for your kindness, and to propose the health of my old friend Mr. Wetherell, and the glorious interests of the '*Red, White, and Roan.*'"

OVER-APPLICATION OF AMMONIACAL MANURES.

The too general application of Peruvian guano, to the exclusion of the more purely phosphatic manures, such as superphosphates, has been forcibly pointed out by Baron Liebig, although the subject was only incidentally alluded to in his letter upon the utilization of sewage. He states:—"I am of opinion that the proportion of ammonia which is brought into the soil by dressing the soil with Peruvian guano is much too large and even noxious for future crops." This observation has been supported by the extended experience of many eminent agriculturists. Several farmers, who upon the first introduction of Peruvian guano, applied it extensively alike to green and grain crops, now find that when the same quantities are applied to the respective field and crops, the results do not correspond with those previously secured, and the crops succeeding those to which the Peruvian guano was applied are not so productive as where phosphatic manures were used. The potato and turnip produce luxuriant tops, but the weight of the tubers and bulbs are less than the large tops would lead the farmer to suppose; while the stems of the succeeding cereals are deficient in stiffness, and the grain is not so plump and heavy as the appearance of the crops when growing indicates. This shows that the amount of ammonia supplied to the soil from the too exclusive use of Peruvian

guano is in excess of phosphoric acid and other constituents of a vigorous and healthy growth.

It is now a common remark among farmers that with each repeated application of Peruvian guano an increase in the quantity formerly used is essential to secure the same full crops; while those who have substituted phosphatic guano, ground bones, or super-phosphate for a part of the Peruvian guano formerly applied, or even for the whole of the quantity, find that the potato, turnip or even green crops grown are more healthy, and, consequently, more productive, while the succeeding corn crops yield more grain and that of better quality. The results obtained from the earlier applications of Peruvian guano to the soil have tended to keep up the repute of this fertilizer; but the experience of those who have continued to use it to the almost entire exclusion of other auxiliary manures shows that it requires to be applied with a due regard to the manurial condition of the soil, more especially as regards the presence of phosphoric acid and potash. These, if not present in sufficient quantities, require to be supplied in some form or other. The most suitable form in which phosphoric acid can be applied to most soils is in superphosphates or fermented bones, while potash can be supplied in stable, farm-yard, and other manures. The disintegration of the rocks and soils derived from several of the rock formations furnish potash in sufficient quantities for most of the cultivated plants.—*North British Agriculturist*.

LEICESTER SHEEP.

We take the following article from a recent number of the *British Farmers' Magazine*:—

A breed of animals is the variation of an established species, of which the marks of distinction have proceeded from the influences of soil and climate, the direction of the sexual intercourse, and the system of management that is adopted. The variations being accidental and contingent, are not definitely, indeed very seldom, perpetuated in the progeny. The changes that occur in the exposure and management of the animal organization, do in many cases very quickly banish the original type, which is everywhere changed into many varieties, and ultimately altogether disappears. This result has been well established in the vegetable world with varieties of plants which hold their type for a time, split into many appearances that are puny and deformed, and ultimately lose all their relation to the primitive exhibition. The animal and vegetable kingdoms being closely related in laws and regulations, the same appearances and results are exhibited in the growths and organizations.

Naturalists find no difficulty in the arrangements of classification till the descending order has come to "species," which is the

lowest rank in the arrangement. In very many cases, the marks of distinction are insufficient to establish a permanent separation, the differences not being so strictly persistent. Hence species and varieties become confounded, and in many cases uncertainties continue to prevail. The generic distinction is in most cases sufficiently established.

The *Leicester sheep* are generally supposed to have proceeded from the amalgamation of the heavy lowland animal with the smaller hill sheep of Charnwood Forest. In a short time the progeny was dispersed by letting and purchase over the neighbouring counties, and into many parts of the kingdom, forming a vastly-improved animal, and thought to be stereotyped from the forge of Bakewell. Purity of breed was all the vogue, or no intermixture with foreign blood, never adverting to the influence of removal.

The importations into Northumberland quickly appeared in two varieties—the blue-caps and red-legs: the former constituting the larger animal and of superior vigor of frame, lengthy, and handsome, and well covered with wool. The red-legs were smaller in bulk, lower on the legs, very compact, with meat of much fat and less fibre. Each variety had its advocates, till both have disappeared; there is now seen a medium-sized animal of much wool, of medium precocity, rather dull in aspect, a good shape, and forming a variety of sheep that is not exceeded in value or utility by any improved animals in the kingdom.

The Leicester sheep of Nottinghamshire are inferior in bulk, rather leggy, with delicate appearance, an open fleece of wool in curly piles, and a head, face and eye, heavy and dull, and not handsome in form. The ear is hanging and sluggish. The breeders of that county reckon the sheep of Northumberland not to be Leicesters at all; the accusation is retorted from the North; and both are right in their opinion, as will be shown.

Among the many varieties that are now seen in the class of the so-called Leicester sheep, the true type of Bakewell is not found, as it gradually disappeared after the wide dispersion of the breed. In the county of Leicester, the most eminent breeders are found to possess varieties of their own production which differ very much in their parts and qualities, being larger or smaller, open or close in the wool, dull or lively, short or scraggy-necked, heavy in the ear, or dull in the eye; face wide, or narrow, tapering to the muzzle; the bones flat, or arched.—The remark extends over all the breeding farms of eminence. Very just exceptions have been made against the animals shown by Mr. Sanday, of Holme-pierpoint, being received as Leicester sheep, properly so-called; the true type is wholly wanting in the leggy carcass, which is light and deficient in girth, wool

open and in curly piles; neck long and scraggy, and rising from the shoulders; the heavy head, eye dull, and the face broad, looking downwards. Instead of pointing forwards. These points are wide from the original type of short legs, wide and round barrell, back level from the tail to the ears, which are narrow, pointed and agile; eye quick and lively, face wide betwixt the eyes, tapering to the muzzle, which points forward, with the neck surmounted by a ruff of wool close round the ears; the wool on the body placed in shelves opening with the hand, closely covering the whole carcass.

The Dairy.

THE MILKING MACHINE.

Editor of the Agriculturist.—DEAR SIR—Can you, through the medium of your valuable publication, give me any information respecting that Yankee invention, the Milking Machine, as to where it may be obtained, probable cost, name of Patentee, and practical utility on a large dairy farm. Yours, &c.,
Barrie, Nov. 30, 1863.

JOHN MORROW.

[Our correspondent will find a brief notice of the Milking Machine in the number of this journal for August 1st, 1860, page 370. The New York *Scientific American*, about July, 1860, contained a cut of the machine, and an article descriptive of it; in which it is stated that the name of the patentee is L. O. Colvin, of Cincinnati, Ohio, that the machine, with the pail, to which it is attached, weighs $6\frac{1}{2}$ lbs., that it does not injure the cow, and that it is capable of doing work at the rate of about four quarts per minute, with much less labour than by hand. We are not able at present to state the price of the article. The editor of the *Scientific American* will probably be able to afford full information. We would advise our correspondent, however, to be well satisfied of the practical value of the machine before investing in it.—Eds.]

EXPERIMENT IN CHEESE MAKING.

MR. EDITOR,—I intended to have sent you this small paragraph last month, but other matters intervened. I therefore now in my plain way lay before your readers a statement of the profits arising from cows. I take the number as eight, that number with about fifteen good ewe sheep would be a sufficient stock for a one hundred acre farm, with the exception

of a working team, and to rear about two calves a year, these calves to be kept on for cows, and dispose of two of your oldest cows yearly. It will require about 16 or 18 acres of pasturage for eight cows, and if those acres be in two lots pasturing alternately, it will yield more milk.

Cows require stabling in the winter and to be regularly attended to; and you will find good straw with a few roots daily will keep your cows in good condition. I prefer mangels to turnips. I think them easier to raise, and they make sweeter milk. You will require to feed a little hay a week or two before calving. I put the amount of hay down at one ton per cow, but they will not require so much, as the beginning of April is about the best time for your cows to come in. I can only charge the hay and pasturage, as I consider the benefit arising from manure when roots are fed, amply repays for the roots. Besides the milk and butter used in the house would be equal to the extra labour. I have taken the average price of cheese for the last three years at 7 cts per pound.

DR.	\$	cts.
Suppose eight cows.....	160	00
Eight tons clover hay at \$7 per ton ..	56	00
Eighteen acres pasture at \$3 per acre.	54	00
Interest on Capital	10	00
	\$280	00
CR.	\$	cts.
By 2904lbs cheese at 7cts per lb	203	28
" Butter, Spring and Fall, 163lbs. at 12½cts per lb.....	20	37½
" Six calves	15	00
" Capital on cows.....	160	00
	393	65½
	280	00
Profit.....	\$118	65½

Should any of these practical remarks prove useful to my fellow men, my aim will be accomplished, "as there are few that throw away an apple because there is a core in it."

Your's very truly,

A SUBSCRIBER.

DETECTING ADULTERATED MILK.

In a lecture before the Royal Dublin Society last winter, Professor Davy, after referring to the composition and properties of milk, and showing that its nature offered peculiar facilities for its adulteration, whilst, at the same time, it presented many difficulties in the way of their ready detection, proceeded to notice some of the principal methods hitherto employed to determine the quality of milk, all of which he showed to be more or less fallacious, and incapable of affording any positive results as to the real quality of milk. He then passed on to describe and illustrate M. Marchaud's method, which is very simple and easy of execution.

It consists in adding to a certain volume of milk in a long glass tube closed at one end, and of about half an inch in diameter, an equal volume of ether (having previously rendered the milk slightly alkaline by the addition of a few drops of a solution of caustic soda or potash). The same volume of alcohol as that of the ether employed, is then added, the proper quantities of milk, ether and alcohol to be used, being indicated by three marks on the tube. After each addition to the milk, the tube is to be well shaken for a few moments, during which time it is to be firmly closed with the thumb of the hand holding it. The alcohol having been added, and the contents of the tube finally well shaken, it is then only necessary to immerse the tube for a few minutes in a vessel of warm water, (the temperature of which about 100° F.,) when an oily layer will form on the surface of the mixture in the tube, and its thickness will be in direct proportion to the richness of the milk in butter.

By having a graduated sliding scale, whose divisions bear a certain relation to the volume of milk employed, and this latter to a pint or quart, the amount of butter in either quantity of milk can be known in a few minutes,

The accuracy of this method of determining the quantity of butter in milk Professor Davy has satisfied himself of by many experiments; and he is of opinion that it might be of much use as a means not only of testing the milk supplied to different public institutions with a view of detecting adulteration, but likewise for the purpose of having them supplied with milk of a certain degree of richness, and that when it was discovered by this method to fall below a fixed standard, it should not be taken into these institutions.

If such a system were employed, Professor Davy has but little doubt that it would in a great degree lessen the present shameful adulteration of the milk supplied to different public institutions, as well as of that sold to the public generally.

EUROPEAN BUTTER TRADE.

To the Editor of the Canadian Agriculturist.

During the month of October very little North Country butter came here; but from the continent the arrivals of Foreign were very heavy; a little came to hand from America, and none from Ireland.

An extensive business has been done this year in Foreign Butters, and on the whole the trade has been a satisfactory one for our dealers; but the demand is now less, as meantime the Grocers are stocked, and it may be a few weeks hence before they are again buying.

The price however keeps very steady at 11d. to 1s. per lb. for prime dairy cured Danish and Kiel, and for collected butter from the same quarter, 8½d. to 9d. per lb. is the value. There is a fair demand for fine North Country,

but mostly for Bakers and Confectioners (our Grocers now refuse to buy it in winter) and for sweet August and September cure I am remitting 10d. per lb., and late cure 9d. per lb. free in Leith.

I have had a further consignment from the party who has been curing with the Bay Salt, and can now fully recommend curers to adopt that sort in preference to the bitter Cheshire Salt with which they are spoiling their butter.

The use of the Sugar and Nitre, as recommended in former circulars, will be found a great improvement in curing winter butter.

Put in.	To 10 lbs.		To 20lbs.		To 30lbs.		To 40lbs.		To 50lbs.		To 60lbs.		To 70lbs.		To 100lbs.		To 112lbs.	
	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.
Salt . .	6	7	12	14	1	3	5	1	9	11	2	0	2	2	6	9	2	13
Sugar .	10		1	4	1	14		2	8		3	12	4	6			4	0
Nitre .	5		10		15		1	4	1	9	1	14	2	8	3	2	3	8

Too much care cannot be taken in weighing Salt, Sugar and Nitre, and in carefully mixing these together before curing the Butter; an excess of any of them tends to deteriorate the quality and price of the Butter. The following scale has been used by curers in the north of Scotland, and found to answer, viz.:

I am, yours respectfully,

WILLIAM McNAIR.

Leith, 7th November, 1863.

PRINCIPLES OF CHEESE-MAKING.

The following extract from the Report of S. L. Goodale, Secretary of the Maine Board of Agriculture, on the manufacture of cheese, contains much information touching the principles which are involved in that business:—

Having secured cleanliness in all the appurtenances belonging to the dairy—having before us pure milk in clean vessels, the next points are, the degree of acidity, and the temperature at which it should be set, i. e. the rennet added to it.

When milk is drawn from the cow it is sometimes alkaline, sometimes neutral, and sometimes acid, oftentimes in summer, never acid so as to taste sour, but sufficiently so as to exhibit an acid reaction to a delicate test. As soon as exposed to the air there commences a spontaneous conversion of the sugar (of which milk usually contains from 4 to 5 per cent.) into lactic acid. The chemical composition of these two substances, as determined by analysis, is the same; yet they are very different substances, to our sense of sight and taste, and the difference is supposed to be due to the transposition of the elementary atoms of the sugar.

Some hold that cheese is best made from new milk. It is true that when too much changed only a hard, sour cheese can be made from it. It is also true that those cheeses which bear the highest reputation and command the highest prices, both in this country and in Europe, are not made wholly from new milk, but from evening and morning milk mixed. From all the evidence presented, I entertain no doubt but the latter is the better practice; or in other words, that it is desirable that the conversion of milk sugar into lactic acid should have made some progress. The precise degree of progress which is best is not definitely known, nor have we at present any easy method of measuring it with precision, but practically it is found that if milk be kept for 12 hours at a temperature of 65 deg., and the morning's milk be then added, and the whole properly warmed, the best results follow, and the due separation of the whey is more easily effected.

In the Cheddar method, which from its advantages both in the saving of labour and superiority of product, is rapidly displacing older methods of cheese-making in England, sour whey is usually added, but this is unnecessary in this country, at least in most cases during the summer months, because of the higher temperature which here prevails, which insures more rapid progress towards acidity, and more caution is required that it do not progress too far than not far enough. Mr. McAdam, a skilful practitioner and teacher of this method, says: when the temperature of the cold milk is 95 deg. or upwards, no sour whey ought to be used, the acid then being

present in a sufficient degree without it. When the temperature is higher, every operation of the process needs to be accelerated, until the curd is taken out and salted; for when too much acid is present, it affects the curd so as to render the cheese hard, and give it a sour taste."

The temperature of the milk when the rennet is added is next to be attended to, and is a point of great importance. It has been found by experiment that milk coagulates soonest when at a temperature of about 115 deg., but when curdled at so high a temperature the product is much injured. The proper temperature, as determined by experience, is usually from 85 to 88 deg., and the whole range admissible, under the varying conditions which sometimes occur, is not more than 10 degrees, namely, from 80 to 90 deg. If set below 80 deg. the curd is long in coming (unless an excess of rennet is added, which is highly objectionable,) is too tender, and the separation of the whey is attended with greater labor, and, unless extreme care is used, with loss, also. If it be set at a temperature above 90 deg., the curd assumes a toughness which is objectionable, and the cheese made from it is hard and of inferior quality.

How shall the proper temperature be determined? My answer is, by the use of a thermometer, and in no other way. The answer given by the practice of a majority of dairymen and dairy-women is, by the feelings, by the judgment, by the verdict of a practised hand; and doubtless they honestly believe those to be sufficient, and may ridicule the use of a scientific instrument to determine so simple a matter.—But the truth is that feelings, though very useful in their place, are not to be depended on to determine temperature. Our bodies are unconsciously affected by too many disturbing causes to afford a trustworthy index to slight differences. Tell a man suffering from fever and argue that he is no warmer now, when seeming to be on fire, than he was a little while ago, when shivering under a heap of blankets, and unless he is assured of the fact by means of other evidence than his own sensation, he will believe you to be laboring under an egregious mistake; he may likely enough take you for a fool, and perhaps exclaim, "Don't I know when I'm burning and when I'm freezing!" and yet the fact is as you stated to him, and easily demonstrated by the introduction of the bulb of a thermometer beneath the tongue or under the armpit. A very simple experiment will satisfy every one that the sensation of cold or heat is not always, even when in perfect health, in consonance with the fact. Take two basins partly filled with water, one as hot as you can comfortably bear, and the other as cold. Plunge a hand in each, and after a little while pour one into the other and put both hands in it; one hand says the mixture is cold and the other says it is warm.

No: if you desire a good product uniformly, and not merely occasionally, there is no other way but to use the proper means, to wit; the employment of an instrument acting by expansion and contraction *in accordance with a fixed law*, undisturbed by any of the many causes which affect living bodies.

How shall the desired temperature be attained? By heating, of course. But the way of doing this may affect the product. Milk should not be heated by the direct action of fire upon the vessel containing it. If a tub is used, the common method has been by warming the milk in a tin pail or other vessel set into a larger one of water, to which the heat is applied. If this method is adopted the whole milk should be warmed, because if only a portion be heated, and that sufficiently to warm the rest to a proper degree, there is danger that some of the buttery portion will rise as oil and escape with the whey. If a tub must be used, the better way is to introduce a tin pail of hot water into the milk in the tub and gently move it about. By a similar method—namely, by the using of a pail of ice water, the evening's milk may be cooled, when to be kept over night in a wooden cheese tub in warm weather. In this way the proper temperature may be attained, and none of it heated too much. But the best way, by far, is to use improved apparatus, consisting of a double vat, the inner one of tin containing the milk, and the outer one water, which is warmed by a fire of a few chips in the heater below. There are quite a number of these, differing somewhat in construction, several of them being well adapted to the purpose for which they are designed.

The principal advantages presented by the improved apparatus is the saving of labor, and this is a most important item—the reduction being not less than one-half or two-thirds; besides this we have the means of securing a more perfect and uniform system of cooking the curd, by an equal distribution of the heat and perfect control of it. (It is managed with ease and at a trifling expense for fuel, only a few chips being necessary. The addition of the tank is a very great convenience, and well worth the cost. It furnishes all the hot water required in the dairy for any and all purposes.

We will suppose the evening's milk to have been strained into the vat as it came in, and cooled to about 65 deg. by pouring cold water into the outer vat. This is considered the most desirable temperature for the milk during the night. If kept much warmer there is danger of too great acidity; if kept much colder, more or less loss or injury ensues to the cheese. If the milk be stirred while cooling, separation and rising of cream to the surface will be greatly checked.

As the morning's milk comes in, it is strained into the vat containing the night's milk; and at the same time stirring in carefully and

thoroughly whatever cream may have risen in the meantime. If coloring is used, it is added at this stage of the process. A little fire is then made in the heater and the whole mass of milk is warmed gradually to 88 deg., at which temperature the rennet is to be added.

Horticulture.

FRUIT ON GRAFTS.

To the Editors of Canadian Agriculturist.

In noticing your correspondent's letters of the 24th August and 12th October, I think a very important fact is omitted. The writer does not state that the *Doyenne d'ete Pear* tree he selected his grafts from was in a *bearing* state. An answer to this question would throw a good deal of light on the subject. The whole mystery of the case has probably arisen from the fact that your correspondent has been mistaken in the tree he cut his grafts from. Having lately visited several of the largest nurseries in the State of New York, I embraced the opportunity of bringing the subject before several of the proprietors, and they all concurred in the opinion that there must have been a mistake in the tree the grafts were selected from. One of the gentlemen, a partner in one of the largest Nurseries on this continent, expressed himself very strongly on the subject, and declared before a gentleman who was with me at the time that he would stake the whole of his interest in their establishment that no such freak of nature could take place. The whole mystery of the case probably consists in the fact that your correspondent has been mistaken in the *purity* of his grafts.

December, 1863. Yours respectfully,
POMOLOGIST.

RULES FOR PLANTING TREES.

The season for autumnal planting is now past, but in a few months this important operation may be advantageously performed. Whether autumn or spring planting is to be preferred depends on the species of trees and shrubs, the state of the soil, character of the season, and other conditions of a minor character. The ill success which one often sees in planting fruit and other trees mostly arises from inattention to a few simple but essential conditions. The following practicable rules given by John J. Thomas, a well known American Horticulturist, would, if carefully carried out, prevent much disappointment, and increase both the wealth and beauty of the country:—

1. If the roots of a tree are frozen out of the ground and thawed again in contact with air, the tree is killed.

2. If the frozen roots are well buried, filling all the cavities before thawing any at all, the tree is uninjured.

3. Manure should never be placed in contact with the roots of a tree, in setting it out, but old finely pulverized earthy compost answers well.

4. Trees should always be set about as deep as they stood before digging up.

5. A small or moderate sized tree at the time of transplanting will usually be a large bearing tree, sooner than a larger tree set out at the same time, and which is checked necessarily in growth by removal.

6. Constant, clean, and mellow cultivation is absolutely necessary at all times for the successful growth of the peach tree, at any age; it is as necessary for a young plum tree, but not quite so much so for an old one; it is nearly as essential for a young apple tree, but much less so for an old orchard; and still less necessary for a middle aged cherry tree.

7. To guard against mice in winter with perfect success, make a small, compact, smooth earthy mound, nearly a foot high, around the stem of each orchard tree.

8. Warm valleys, with a rich soil, are more liable to cause destruction to trees or their crops by cold, than moderate hills of more exposure, and with less fertile soil—the cold air settling at the bottom of valleys during the sharpest frosts, and the rich soil making the trees grow too late in autumn, without ripening and hardening their wood.

9. The roots of a tree extend nearly as far on each side as the height of a tree; and hence to dig it up by cutting a circle with a spade half a foot in diameter, cuts off more than nine-tenths of the roots; and to spade a little circle about a young tree not one quarter as far as the roots extends, and call it "cultivation," is like Falstaff's men claiming spurs and shirt collar for a complete suit.

10. Watering a tree in dry weather affords but temporary relief, and often does more harm than good, by crusting the surface. Keeping the surface constantly mellow is much more valuable and important—or if this cannot be done, mulch well. If watering is ever done from necessity, remove the top earth, pour in the water, and then replace the earth—then mulch, or keep the surface very mellow.

11. Shriveled trees may be made plump before planting, by covering tops and all with earth for several days.

12. Watering trees before they expand their leaves should not be done by pouring water at the roots, but by keeping the bark of the stem and branches frequently or constantly moist. Trees in leaf and in rapid growth,

may be watered at the roots, if done properly.

13. Young trees may be manured to great advantage by spreading manure over the roots as far as they extend, or over a circle whose radius is equal to the height of the tree in autumn or early winter, and spading this manure in, in spring.

14. Never set young trees in a grass field, or among wheat, or other sowed grain. Clover is still worse, as the roots go deep, and rob the tree roots. The whole surface should be clean and mellow; or if any crops are suffered, they should be potatoes, carrots, turnips, or other low, hoed crops.

PREPARATION AND MANAGEMENT OF LAWNS.

The following essay, which we copy from the Gardener's Monthly, was lately read before the Pennsylvania Horticultural Society, by William Bright:

The first important point in the preparation of a lawn, is to obtain an open, porous, well-drained soil, of *good depth*. To this end, if the soil be naturally wet, it must be drained in some manner, either by tile or stone drains. If sufficiently drained, the requisite depth may be obtained by thorough ploughing and subsoiling, using such ploughs and such force of team as will open the soil to the depth of eighteen inches at least. On grounds of any extent, this is cheaper than trenching, and quite effectual.

The subsoil ploughing should be performed in the dry weather of the summer or fall previous to seeding the following spring. Free harrowing is of course useful.

The *quality* of the soil must next receive attention, and it is vastly important that this should be of *uniform quality* all over the surface, and of *uniform depth*. Nearly all lawns are graded more or less, and when this is done, be careful that the soil is kept of uniform quality and thickness. The surface soil must frequently be taken off large spaces, and after the grading has been done, it must be replaced in such a manner that it shall as nearly as possible resemble in quality and depth the natural soil of the lot.

Sandy soils, as everybody knows, may be greatly improved by a dressing of clay or good clayey loam, and clay soils by the addition of sand. This is a simple fact, but one not sufficiently heeded in the hurry which usually attends the preparation of new grounds.

As to manuring, if the land be very poor, it may be heavily manured in the fall, with good, short, well-rotted stable manure; or with a compost of muck or stable manure. Bone dust, superphosphate of lime, and wood ashes are of course valuable additions to such a compost. If the land is good,—that is, good corn or wheat land,—it will need no manure. It is not so much

richness of soil as *depth*, freedom from excess of moisture, and uniformly good texture and good quality that we desire.—Mixing poor and good soil, in spots, in various parts of the lawn, when grading, will produce a sod which can never be made of uniform color and beauty by any future dressing or manuring. The soil must be of uniform good quality and uniform depth, to make a good lawn.

The treatment of the lawn, the first spring after it is graded, will be as follows:—The first day, after the frost is out of the ground and the soil is sufficiently dry to be worked, let the winter-washed places be repaired, then harrow the whole surface carefully, and if not quite smooth, hand-rake the rougher parts, using also the roller if necessary to obtain a fine smooth surface. A little lime, and well-rotted compost may also be applied at this time if required.

The seed should be sown as early as possible, say the 15th of March in this region. Sow on recently harrowed ground, not too rough. The seed needs to be barely covered with earth. It is better, perhaps, after sowing, to cover the seed with a hand rake, using both teeth and back of rake to cover it. Or it may be covered by the back or top of a light harrow drawn over it.

It is not desirable to sow any sort of grain with the seeds for a lawn, nor to sow a great variety of mixed grasses. The best grass-seed is the common green-grass (*Poa pratensis*), [otherwise known as Kentucky blue-grass, June grass, &c].

As soon as the seed germinates, and the grass comes up an inch, on a dry day pass a light roller over it. When the grass is three or four inches high, cut it with a sharp scythe, as close as possible. Mow it with the blade of the scythe *hard on the ground*.—Cut the grass every two weeks during summer in the same manner. A little hay may be obtained by spreading the grass, when cut, very thin, and mowing it once a day, without injury to the lawn. But it is better to mow *often and close*, and remove the grass at once, using it for mulching trees, &c.

Take out dock, dandelion, and other large coarse plants and weeds, with a chisel on the end of a short pole. Pull red clover by hand, but no small weeds will need to be removed by hand if the lawn is mowed often and closely as directed every two weeks. The grass will soon overcome the small weeds.

Mow very close the last thing in the fall, to keep mice from harbouring in the old grass. About the first of November, or later, top-dress the lawn with compost or manure, if necessary, and hand-rake smooth and clean.

Rake the surface of the lawn, in the spring of the second year, and every year thereafter, as hard and close as possible, with an iron rake, to take out the old grass, stones and sticks; and roll when the ground is moderately dry.

Cut the grass early and often the second year, and very close, the same as at first directed.

When the lawn is an extensive one, and well made, a lawn-mowing machine may be used with great advantage, as often as the grass is three or four inches high. If the grass is five or six inches high, the scythe works best. Use the longest bladed scythe that is made.—This gives a more even appearance to the lawn than when a short bladed scythe is used.

The lawn should be so made and so graded, raked and rolled, that the scythe and roller will touch every square inch of the surface. This is of course a point of the first importance.

The great requisites of a good lawn are smooth grading, a good loamy soil of even quality, broken up to a depth of eighteen inches or more, and so porous and well-drained that it will readily part with excess of moisture, and yet of such a character that it will retain a proper degree of humidity to sustain a heavy growth of grass. Well-rotted manure, leaf-mould, clayey loam and clay, of course assist to retain moisture in light soils, and are exceedingly useful additions to most lawns. With the points herein enumerated faithfully attended to, there is no difficulty in obtaining a beautiful and durable lawn.

When the reading of the essay was concluded, a discussion took place in regard to the general subject. Mr. Harrison said he did not approve of mixed seeds for lawns. The great object is to obtain a uniform turf, which is not attained by the use of mixtures. The green-grass (*Poa pratensis*) endures drought better than any other, and the leaf is very fine and of a beautiful rich green tint. Mr. Mitchell had tried the Italian rye-grass; it is handsome but not hardy. Mr. Pollock said his lawn was entirely of Kentucky blue-grass or green-grass. It is admitted to be always green, luxuriant and uniform.

CRACKING OF THE APPLE AND PEAR.

The cracking of the apple and the blotches and scarifications frequently observed on its surface have been referred to the attack of fungoid growths or mildew. Various examples have been cited where orchards, sheltered from prevailing winds, have shown a decided exemption from these attacks. In opposition to this supposed cause of immunity it has been asked, Are our orchards more exposed now than they formerly were? As a general rule, we think it quite likely that they are, seeing that in all sections as cultivation increases the forests are gradually thinned and cleared. The effects of destroying the forests of country have already been noted; and we have a partial recognition of the importance of shelter in the precept of many intelligent orchardists who advocate the planting of fruit trees much closer than has formerly been the rule, and also in the practice of encouraging the trees to branch quite to the surface, instead of training to a clear stem five or six feet from the root. Both these expedients have a ten-

dency to prevent rapid circulation of air through the orchard, and consequently are so far a preventive against evaporation from the soil as well as from the surface of the trees. Examples are not sufficiently numerous to warrant a decided opinion; but so far as they have been noted, the prospect of greater immunity by this mode of treatment is encouraging.

The cracking of this fruit has given rise to much speculation, and various theories have been advanced with reference to the cause. For a long period the opinion prevailed that it was owing to a deficiency of certain mineral ingredients in the soil, and various remedies based on this assumption were freely dispensed and tried, but with indifferent success. It is not now doubted that it is the result of a mildew, and that the atmosphere, and not the soil, is at fault. In support of the opinion that it is governed by atmospheric influences, the fact may be quoted that the White Doyenne, one of the finest pears when perfect, rarely succeeds in exposed localities; yet when grown in positions thoroughly protected, it is still produced in all its pristine beauty and excellence. Referring to cases with which we are familiar, we have seen annual exhibitions of this fruit grown in the built-up portions of the cities of Philadelphia and Baltimore, most perfect of its kind, without spot or blemish, when those from trees growing in the more exposed suburbs invariably proved defective. Again, it has been lately shown that, fruited in the quiet atmosphere of a fruit-house, they attain great perfection; and further, we have seen a tree, one of a row that produced worthless fruit, enclosed on all sides by a small box, open at top and elevated a few inches above the soil, produce perfect fruit, while the productions of the adjoining trees were, as usual, cracked and worthless. Whatever may be allowed for protection in the above cases, it is very evident that they were not influenced by the nature of the soil.

—*Rep. Dep. of Ag.*

HISTORY OF THE APPLE.

H. T. Brooks, President of the Fruit Growers' Society of Western New York, in a late address before that Association, gave some valuable facts in regard to the history of the apple, from which we take the following:—

The ancient Celts knew the apple, calling it Abhail, Aval, Avel, in different dialects. In 973, King Edgar, "while hunting in a wood, lay down under the shade of a wild apple tree." In 1175, Pope Alexander III, confirmed to the monastery of Winchome, "lands, orchards, meadows, &c. The fruiterer's bill of Edward I, in 1292 mentions the "Poma Costard," which was grown so exten-

sively that the retailers of it were called Costard mongers. The Costard is now rarely found in England, but the Winter Pearmain, that has a still earlier record, being cultivated in Norfolk in the year 1200 is still extensively grown and highly esteemed. (See Bloomfield's History of Norfolk.) The Pippin, the Romet, the Pomme-royale, and Marigold, are very early spoken of. In a note-book, kept in 1580 to 1583, "the Appell out of Essex, Lethercott, Russett Appell, Lounden, etc.," are mentioned. The "Husbandman's Fruitful Orchard," published in London in 1597, enumerates Pippins, Pearmain, John Apples, Winter Russeting, and Leathercoats.

John Parkinson, who wrote in 1620, was the first English author who gave anything like a satisfactory account of Early English Apples. He enumerates fifty-nine varieties, with "twenty sorts of Sweetings, and none good." Either he was very sourly disposed, or the best sweet flavors were very coy and slow to come out, discriminating very unmercifully against the ancients and in favor of us. Rea, 1665, mentions 20 varieties, 16 of which were not mentioned by Parkinson, from which we conclude that the popularity of some sorts was of short duration, as is the case in our day. Meager, 1670, gives 83, and Worlidge, 1676, gives 92 varieties. From this period there were sorts enough, the world knows: Coxie in 1816, enumerates 113 varieties; Downing 182; Hogg's "British Pomology," enumerates 942, and yet our "New American Encyclopedia" takes the trouble to tell us there are over 200 varieties.

It is well known that apples were introduced to this country from England by the first settlers. "The Governor and Company of the Massachussets Bay in New England" introduced apple seeds in 1628. Governor Winthrop was granted Governor's Island, in Boston Harbor, April 3, 1632, on the condition that he should plant thereon a vineyard or an orchard. Orchards were planted near Pawtucket, R. I., 1636, and at Hartford, Ct., 1645. Mr. Henry Coleman says "An apple tree growing at Kingston, Plymouth county, and planted 1669, the year of King Phillip's War, bore, in 1838, thirty bushells of good fruit."—Pretty well for a tree 169 years old—it was a "Hightop 8weeting," a favorite apple with the Colonists.

The apple, like the pear, is tenacious of life; our best varieties, with their owners' permission, will last from 50 to 80 years, and some hardy and vigorous trees have reached at least 200 years of age.

There was recently standing in Prince-George county, Maryland, a Coddling tree sent there by Lord Baltimore over a century ago.

Veterinary Department.

DISEASES OF THE EYE.

A disease we often meet with in practice is Specific Ophthalmia or inflammation of the middle tunic of the eye; this disease is also called Hereditary or Moon blindness and Periodic Ophthalmia. This last appellation denotes its peculiarly characteristic or most remarkable property, as it returns by relapses as though it were a fresh disease, after being absent for more or less considerable time. It received the name of Moon blindness from the earliest authors on farriery, from the supposition that, "as the cumoon haged, the horse gradually recovered his sight."

All horses are liable to the disease, as it consists at first in inflammation of the middle tunic, which ultimately extends to the whole vascular part of the eye as the ciliary processes, &c. &c. In this inflammation of the choroid coat, or middle tunic, owing to the inelasticity of the sclerotic and cornea, when exudation has taken place the pressure causes intense pain, and as a consequence is accompanied by great fever. The causes of this disease are both predisposing and exciting; the predisposing are hereditary disposition, this hereditary disposition lurking for a long time until some exciting cause brings about the disease. Among the exciting causes, and a very common one indeed, is foul air in badly ventilated stables, also exposure to the sun; external injuries also prove an exciting cause. At first the eruptions much resemble those of simple ophthalmia. We have the watery eye, and red conjunctiva and partial closure of of the eyes, the upper eyelid droops upon the cornea to shut out the glare of light, the tears are secreted in great abundance, overflowing the lower eyelid and streaming down upon the face; there is always a retraction of the eyeball, and the cloudiness may not be confined to or even exist in the cornea. The organ is intolerant of light, as is seen when the eye is exposed to the glare of the sun, or artificial light, the membrana metitans or hair protudes and the eyeball recoils within its socket. Another symptom is the peculiar recurrence of the disease, and after each recurrence the cloudiness gradually becomes more intense and condensed. In this disease we frequently find one eye affected more

than the other and the shifting of the disease from one eye to the other. The portion of sclerotic visible is always intensely red. To the symptoms are speedily added those of fever, the pulse is quickened, the mouth extremely hot, the animal if put to work perspires readily. The inflammation is very prone, on the slightest exciting cause, to return again and again, or affect first one eye and then the other, until one or both are destroyed. As the disease advances the cornea becomes transparent, leaving however a slight muddiness in the anterior chamber of the eye; and one marked symptom is the dullness of the anterior surface of the iris and the smallness of the pupillary opening. As the dullness disappears we find more or less opacity of the crystalline lens and its capsula constituting what is called a cataract.

Percivall mentions in his writings on diseases of the horse that geldings are more subject than mares to ophthalmia. He says, of the fifty cases of troop horses recorded in his own practice thirty nine have occurred in geldings, eleven only in mares. Dr. Arboval is of the same opinion, and agrees with Percivall in thinking that the greater irritation occasioned by the cutting of the tusks than of the other teeth renders geldings more subject to the disease. The treatment of this disease consists more of alleviating than curing—bloodletting and counter irritants are recommended, as bleeding from the facial vein, administering laxative medicines and placing the patient in a well ventilated darkened loose box, and also applying cold lotions. In many cases the extract of belladonna is useful, combined with powdered colchicum. When of some days standing blisters round the orbit and setons on the poll are recommended, both as expediting recovery and preventing the recurrence of the attack.

SHOEING HORSES.

A work modestly entitled "NOTES ON SHOEING HORSES," has recently been published in England from the pen of Col. Fitzwygram, of the 15th Hussars, and which has already attracted much attention, and received no ordinary amount of commendation.

Col. Fitzwygram begins his description of the structure of the foot by showing the reason why shoeing is necessary, namely, the preservation

of the horse's foot from undue wear, "the art of good shoeing" being "to afford the necessary protection with the least possible damage to the structure, or interference with the functions of the foot," a natural conclusion being that "to keep the foot sound and healthy when shod, we must aim at preserving it as nearly as possible in a natural state." This point the writer keeps steadily in view throughout his work, and in that principle—namely, the preservation of the foot in as natural a state as possible—lies the very essence of the subject.

The following extract will give some idea of the practical character of this valuable treatise:—

"Most people have noticed how badly many horses go when newly reshod; how apt they are to stumble; and it is not until the shoes have been worn some days that they seem again to go at their ease. The reason of this is simple enough. As horses are usually shod, that portion of the toe which would, in a state of nature, have been worn away by friction with the ground, is retained. Not only is this the case, but the evil is further aggravated artificially by the presence of a straight iron shoe, which is made to fit the protected, and, therefore, elongated, toe. It can scarcely be a source of surprise that a horse so shod strikes his toes against the ground and stumbles. The horse has neither ease nor comfort nor safety in travelling until by friction with the ground he has torn off some portion of the projecting toe of his straight shoe; until, in short, he has in some degree by wear assimilated the toe of the shoe to the natural tread of his foot. But the horse which is shod with straight shoes never gains complete ease and comfort in action, because the shoe not only requires to be worn through, but a portion of the crust at the toe must also be removed before a really natural shape and level bearing can be attained. The relief gained by the wearing away of the toe of the shoe is only comparative, and is very inferior to that obtained by the use of turned up shoes, adjusted to fit the crust, previously lowered by the knife to represent the natural rounding off of the toe by wear, as seen in the unshod horse.

"From noticing how badly many horses went when newly reshod, Mr. Hallan, late veterinary surgeon of the Inniskilling Dragoons, took his first ideas of turned-up shoes. Starting from this simple and notorious fact, he carefully traced out its causes, and was thereby enabled to throw much light on the whole subject of shoeing. At first to remedy the evil just spoken of, he made the new shoes in shape exactly like the old ones; improved going was the natural result. At the next shoeing he followed up his advantage, and made the new exactly like the then old shoes; and so on, each time with improved results. He did this at first only with horses that stumbled or 'toed,' as horsemen say; he thought on the subject, followed it up, watched the results carefully, and at last saw

that nature intended a horse to have a bearing on his whole foot, and not mainly on his toes. He saw, too, not merely that the straight toe caused the horse to trip and stumble in putting down his foot, but that it produced an unnatural, lever-like, resistance against the ground, and, consequently, an additional strain on the tendons every time the foot was raised from the ground. After much consideration and various trials, he eventually shod all horses with the shoes so turned up that the wear at the end of the month should be nearly even all over the foot. He rightly argued that if stumbling horses were sensibly relieved by complying with nature's requisitions, *all* horses would go more comfortably and more safely by following the same unerring guide. Mr. Hallen did not argue for any arbitrary degree of 'turn-up' at the toes, but for a general principle, viz., *so to shoe the horse that there should not be an unnatural degree of wear at one part, and a total absence of it at others.* It would be found, however, that in practice most horses, as we might expect in the adoption of a natural system, require very nearly the same degree of turn-up at the toes."

We subjoin the Colonel's directions for shoeing ordinary feet:—

"To shoe horses with ordinary feet we would suggest the following directions to the farrier:—

"1st. With your drawing-knife take off from the ground surface of the crust as much as may represent a month's growth. Remember that there is generally a far more rapid growth of horn at the toe than at either the heels or the quarters. More, therefore, will require to be taken off the toe than off other parts; in other words, shorten the toe. Be careful to make the heels level. Having lowered the crust to the necessary extent with the knife, smooth it down level with the rasp.

"2nd. Round off the lower edge of the crust with the rasp. Do this carefully and thoroughly. If a sharp edge be left, the crust will be apt to split and chip. The preparation of the foot is now complete. It remains to fit the shoe to the foot.

"3rd. Let the shoe be made with a narrow web ($\frac{3}{4}$ inch) of even width all round, except at the heels (see direction No. 8), flat towards the sole, and concave to the ground.

"4th. Turn up the toe of the shoe on the horn of the anvil. The degree of 'turn-up' must be regulated by what you find necessary in each horse to make the wear nearly even all over the shoe. It will be found in practice that most horses take much about the same degree of 'turn-up.'

"5th. Make five countersunk nail holes in each shoe—viz., three on the outside, and two on the inside. Make the anterior hole on each side immediately posterior to the 'turn-up.' Let the second and third holes on the outside divide evenly the remaining space on the heel.

Let the second hole on the inside be opposite to the second hole on the outside.

"6th. Let the nail holes be punched coarse, i.e., nearly in the centre of the web, brought out straight through to the other side. This may be done with safety were a good crust has been preserved.

"7th. Fit the shoe accurately to the foot. It must be as large as the full unrasped crust, but no part must project beyond. The shoe must be continued completely round towards the heels, as far as the crust extends.

"8th. The web must be narrowed at the heels, so that its inside edge must cover the line of the bars, and no more.

"Slope off the heels of the shoe in the same direction as the heels of the crust, so as to prevent the possibility of their catching in the hind shoe.

"Select nails that will fit exactly into, and completely fill the nail holes.

"11th. Twist off the clenches as short and stubby and possible, and lay them down flat with the hammer, and let the pincers during this time be firmly pressed against the heads of the nails. The clenches are not to be filed either before or after turning down, nor is a ledge to be made in the crust to receive the clenches. For ordinary hind feet the pattern of shoe in common use is recommended, but with a clip on each side, immediately anterior the first nail, instead of one only at the toe. This double clip keeps the shoe steadier in its place than the single. The web should be made somewhat wider at the toe than at other parts, in order to allow space for the thorough sloping of its inner edge, as recommended under the head of Over-Reach.

"For reasons which have been already explained, the hind foot does not require to be shortened at the toe like the fore foot; but the other directions given above—namely, as regards lowering the crust, rounding its lower edge, accurate fitting without rasping, punching the nail holes coarse, nailing, and clenching, with the total absence of rasping, paring, opening the heels, cutting away the frogs or bars, &c.—apply equally to hind as to fore feet. Six nails—viz., three on each side—are needed for the hind shoe. Without the third nail on the inside, shoes are apt to 'twist' on the feet. The horse is now shod. Nothing more must be done for the sake of what is sometimes called appearance. The best iron only should be used for shoes. Good iron makes a light shoe wear as long as a heavier one of inferior metal."

Editorial Notices, &c.

THE RURAL ANNUAL AND HORTICULTURAL DIRECTORY FOR 1864: Rochester, New York, Joseph Harris.

This is the ninth volume of this very cheap

and valuable annual, brought out by Mr. Harris, editor and proprietor of the *Genesee Farmer*. Its contents, like its predecessors, are varied, interesting, and highly instructive, embracing almost every subject of importance connected with the routine of the farm, garden, and domestic economy. Several original articles written especially for the Annual, by distinguished contributors will be found of great practical utility. Among them may be mentioned: The Culture of Hops; Flax; Pears; Strawberries; The best means of enriching the soil; The Connection between the roots and leaves of Plants; Picking and Marketing Fruit, Planting Trees, &c., &c.

The price for single copies is only 25 cents. A complete set of eight numbers, handsomely bound in two volumes, will be sent to any address by mail on receipt of \$2 50. Or the last six volumes of the *Genesee Farmer*, and a complete set of the *Rural Annual*, handsomely bound for \$8. These volumes would be quite an extensive library of Agricultural and Horticultural knowledge in themselves, and would be an invaluable acquisition to every young farmer desirous of excelling in his calling.

REPORT OF THE COMMISSIONER OF AGRICULTURE, FOR THE YEAR 1862 Washington: 1863.

Some of our readers may not know that a new Agricultural Department has recently been established in connection with the Federal Government at Washington; or, in other words, that the Patent Office, as far as Agriculture is concerned, has been superseded by a separate and independent department; the first fruits of which, in the above report, are now before us.

The present report is undoubtedly very superior as a whole to any of its predecessors that emanated from the Patent Office, and reflects great credit on the industry and skill of Mr. Commissioner Newton and his coadjutors, who evidently possess the requisite qualifications of conducting this most valuable department of government with ability and success. The volume is handsomely got up, and contains upwards of forty articles on rural pursuits, from writers distinguished for experience and ability. Our readers will form an idea of the contents of the volume from the subjoined summary of the principal articles:

Mr. Goodale, the able Secretary of the Maine Board of Agriculture, has a valuable paper on the Breeding of Animals; Levi Bartlett on Wheat Growing in New Hampshire; L. Bollman, of Indiana, on the Wheat Plant and Sorghum Culture; Sandford Howard, of the *Boston Cultivator*, on Kerry Cattle and Different Breeds of Horses; Joseph Harris, of the *Genesee Farmer*, on Stall Feeding Cattle and Sheep; J. J. Thomas on Farm Implements and Machinery; Dr. Hall on the Health of Farmers' Families. There are also interesting articles on Wild Flowers, the Ailanthus Silkworm, Flour Making, Coal Oil, Preservation of Food, Agriculture in Morocco, &c. The Horticultural subjects embrace—Shelter and Protection of Orchards, Popular Varieties of the Apple and Pear, Climatology of American Grapevines, &c.—We are also indebted to Mr. Grinnell, Chief Clerk of the Department, for copies of the Monthly Crop Report, a document that is got up with much labor and care, embracing the whole Union. The matter which it contains must be of the greatest value to the farming and commercial portions of the community.

STUMP MACHINE.—Mr. G. F. Beebe, of So phiasburgh, Prince Edward County, obtained the first prize for a stump machine at the late Provincial Exhibition. He informs us that it is capable of pulling 25 pine stumps in a day, with one span of horses and two men. Mr. Beebe obtained a Patent for his machine in July of the present year.

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August 20th, 1863.

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TORONTO MARKET PRICES.

TORONTO, DECEMBER 22, 1863.

Fall Wheat, per bushel	\$0 90 to \$1 04
Spring Wheat, "	75 " 83
Barley, "	70 " 80
Peas, "	50 " 53
Oats, "	40 " 42
Rye, "	56 " 60
Beef,	3 00 " 4 50
Potatoes, per bushel	35 " 55
Flour, No. 1 to Extra	3 80 " 4 50
Turnips	12 " 15
Carrots	20 " 25
Pork, per 100 lbs.	4 75 " 5 50
Geese, each	25 " 40
Ducks, per pair	30 " 40
Turkeys, each	75 " 1 00
Apples	1 50 " 2 50
Fresh Butter, per lb.,	15 " 20
Tub Butter	12 " 15
Eggs, per doz	15 " 23
Chickens,	30 " 35
Calves, each,	4 00 " 6 00
Sheep, each	3 75 " 4 50
Hay, per ton,	10 00 " 12 00
Straw, "	6 00 " 7 00
Hides, per 100 lbs.	5 00 " 5 50
Calf-skins, per lb.	8 " 9
Sheep Skins	80 " 1 25
Wool, per lb.	40 " 43
Plaster of Paris, per barrel ..	95 " 1 00
.....	1 80 " 1 87

PROSPECTUS

OF

THE CANADA FARMER,

A NEW (FORTNIGHTLY) JOURNAL

OF

Agriculture, Horticulture, and Rural Affairs.

The Subscriber has determined to make the experiment whether a first-class Agricultural Journal can be sustained in Canada. He proposes to issue early in January, 1864, the first number of THE CANADA FARMER, and to continue the publication on the 1st and 15th days of each month. Each number will contain sixteen pages *quarto* of closely printed matter. It will be printed on fine paper, from an entirely new font of type. The services of an able agricultural writer as EDITOR-IN-CHIEF have been secured, and he will be assisted by an efficient staff of Writers, Reporters and Correspondents. First-class Artists and Engravers have also been retained to prepare illustrations for the paper. No exertion or expenditure will be spared to render the new Journal a worthy representative and advocate of the Agricultural interests of Canada.

In the conduct of THE CANADA FARMER, the following ends will be zealously labored for:—

- 1.—To arouse public attention, by frank and temperate discussion, to all questions scientific, commercial, legislative or otherwise, specially affecting the Farming interest.
- 2.—To stimulate the Agriculturists of our country to adopt an improved system of husbandry, by blending the lessons of modern science with the practical experience of the Canadian farmer.
- 3.—To bring under the attention of our Farmers all improvements at home or abroad, worthy of adoption, affecting the management of FIELD CROPS—the BARN-YARD—the STABLE—the DAIRY—the ORCHARD—the POULTRY-YARD—the APIARY—the KITCHEN GARDEN, and the FLOWER GARDEN; and to excite an interest in the progress of Rural Architecture and Landscape Gardening, and in all that concerns the Domestic Economy of the Farm-house.
- 4.—To mark and report all improvements in Agricultural Machinery—foster new inven-

tions—and promote the adoption of all labor-saving machines in the work of the farm and garden.

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- 6.—To keep prominently in view whatever is specially interesting to the Sheep-raiser and Wool-grower—the breeds best adapted to our climate—the best systems of winter and summer management—and the varying prospects of the Wool market.
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- 8.—To report concisely the proceedings of Agricultural Shows, Fairs and Sales throughout the Province—note the condition and progress of the Herds and Flocks of prominent Stock-breeders; record the importation of Thoroughbred Stock from abroad, and publish Engravings of first-class Prize Animals.
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Communications on Agricultural subjects are invited, addressed to "*The Editor of the Canada Farmer*," and all orders for the paper will be sent to

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TORONTO, 7th December, 1863.





